

Subj: Key AK risk issues
 Date: 6/29/2001 7:41:46 AM Central Daylight Time
 From: Cygan.Gary@epamail.epa.gov
 To: mikulka05@aol.com, Guenther.Robert@epamail.epa.gov

some additional stuff to talk about at 9

----- Forwarded by GARY CYGAN/R5/USEPA/US on 06/29/01 07:30 AM -----

Paula
 Williams
 <pwill98@hotmail.com>
 To: GARY CYGAN/R5/USEPA/US@EPA,
 peak.christopher@doj.gov, Robert
 Guenther/R5/USEPA/US@EPA
 cc:
 06/28/01
 10:01 PM
 Subject: Key AK risk issues

→ CHMITZMAN, PEARL E
 U.S. DOJ. GOV

(Gary, could you forward this to Mike? I didn't have his home email on me.

And Eric too.)

I reviewed the Tetra Tech (TT) and OEPA (O) comments and boiled them down, along with my comments (P), into 7 main issues, at least for human health.

(no comment on the eco from me). I have referred to the source of the comment in parens after the comment, the source gives good support for the argument presented. Here they are...I hope the formatting isn't too erratic upon transmission....

1. AK claims that the perched groundwater is not a current or future complete exposure pathway.

*The perched groundwater is the source of the continuing seeps to the Creek. The perched gw is not hydraulically isolated from the other aquifers. Therefore, the perched gw is a future complete pathway. (TT3, P1)

*Rain and process water infiltrate and encourage transport of contaminants in the perched groundwater. (P1)

*The transportation of contaminants results in continued and increasing deposition of PCBs in Creek sediments. (TT3)

2 Children aged 0-6 years are not considered for fish consumption in the AK risk assessment.

*PCBs bioaccumulate. Children who consume contaminated fish will store PCBs in adipose tissue and have a lifetime of exposure. (P2)

*AK uses the age group of "14 and under" to represent children. The convention is to consider ages 0 to 6 for children. The younger age group eats a significant portion when compared to a per body weight scale; this portion is higher than adults. The adolescent ages given by AK more represents an adult scenario, and thus underestimates risk to young children. (O2)

3. Omission of pertinent data sets.

*Table 3-1, which presents the data sets used by AK, does not cite EPA

Friday, June 29, 2001 America Online: Mikulka05

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or Wright State (WSU) data. EPA sampled surface water and sediment. WSU took sediment samples. Because this data was omitted, AK did not include PCBs as a compound of potential concern for surface water when PCBs were present in all media according to EPA and WSU samples. As a result, swimming and wading risks were underestimated. (TT5 and TT General Comment 1)

*AK used homologue-based PCB sampling. EPA recommends Aroclor-based methods. Values are likely to be underestimated using the homologue-based method. (TT6, O4)

✓ 4. The work plan for the risk assessment was not approved by neither EPA nor OEPA. The exhibits do not reflect previous comments provided by the Agencies. (TT general comment 4, O first page)

5. Underestimation of Creek access.

*AK says that they own the immediate area surrounding the Creek. In reality, this area is publicly owned and accessible. (TT1)

*AK states that there is no evidence that people access the Creek at specific points. Several facts refute this point. There are worn paths leading to the Creek. There is evidence of congregation near the Creek. Children play at the Creek near the school. (TT7, P general comment)

6. Underestimation of fish present in the Creek.

*OEPA, WSU, EPA, and area newspapers have evidence of game fish in the Creek.

*There is evidence that residents are eating carp and catfish; AK alleges that these types of fish are not palatable. (O1)

7. Underestimation of amount of fish consumed.

*OEPA and USEPA agree that AK assumptions are underestimations of fish consumption. (TT9, general comment 2, O2)

*AK cites the Ohio fish advisory as a deterrent to fishing. Evidence suggests that the advisory and posted signs do not deter fishing. Also, recent press releases touting the AK risk assessment imply that there is no

risk associated with Creek fish. These releases further undermine the power of the advisory. (O2)

As I said in my email yesterday, AK's risk estimations were within one order of magnitude of our accepted ranges. These comments bring into question that gap and suggest real risk.
I look forward to our conversation, I hope this helps.

Get your FREE download of MSN Explorer at <http://explorer.msn.com>

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----- Headers -----
Return-Path: <Cygan.Gary@epamail.epa.gov>

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DRAFT

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

CONFIDENTIAL
RELEASED
DATE 11/27/18
RIN # 2018-004691
INITIALS Jw

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| _____ |) | |
| THE UNITED STATES OF AMERICA, |) | |
| |) | |
| Plaintiff, |) | CIVIL ACTION NO. C-1-00530 |
| |) | |
| and |) | JUDGE HERMAN J. WEBER |
| |) | |
| THE STATE OF OHIO, |) | |
| |) | |
| Intervenor Plaintiff, |) | |
| |) | Plaintiffs' Proposed Plan for the |
| v. |) | Conduct of Litigation and |
| |) | Proposed Scheduling Orders |
| AK STEEL CORPORATION, |) | |
| |) | |
| Defendant. |) | |
| _____ |) | |

Counsel for the United States, State of Ohio, and Sierra Club/Natural Resources Defense Council (collectively "Plaintiffs"), have prepared, and hereby submit, this Proposed Plan for the Conduct of Litigation and Proposed Scheduling Order ("Plaintiffs' Proposed Plan") regarding the United States' Eighth Claim for Relief and other matters in this action.

During proceedings on November 7, 2001, and by Order dated November 28, 2001, the Court severed the United States' Eighth Claim for Relief ("Claim Eight") from all other Claims for Relief in the United States' First Amended Complaint. The Court directed counsel for the United States to prepare a draft case management plan for Claim Eight and other matters in this action and circulate it to the Parties for their review. During this process, Plaintiffs reached agreement on a plan, but were unable to reach agreement with AK Steel. During proceedings on January 7, 2001, the Court suggested that, given this impasse, Plaintiffs and Defendants submit separate plans.

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Plaintiffs' Proposed Plan takes into account the EPA's recent action to stay the August 17, 2000 Administrative Order issued to AK Steel pursuant to Section 7003 of the Resource Conservation and Recovery Act, 42 U.S.C. § 6973 ("Section 7003 Order"). On March 1, 2002, EPA stayed the Section 7003 Order and provided AK Steel an opportunity to confer with the Agency on the Order and submit any information regarding any concerns AK Steel may have concerning the Order. Following the opportunity to confer and AK Steel's submission of information, EPA will consider and respond to any issues and information raised by AK Steel. EPA intends to expand the administrative record to include any relevant information, and, if necessary or appropriate, modify or withdraw the Section 7003 Order. As set forth below, Plaintiffs' Proposed Plan takes into account the estimated three to six month delay in the litigation of Claim Eight that may result from this administrative process.¹

Plaintiffs' Proposed Plan contains four Phases. Phase I addresses discrete Federal Clean Air Act, Clean Water Act, and State supplemental water and hazardous waste claims that are unrelated to the United States' Eighth Claim for Relief and which have not been stayed by the Court.² Under Plaintiffs' Proposed Plan, discovery on Phase I Claims would commence following the Court's entry of a final scheduling order on Phase I. Phase II addresses the United States' Eighth Claim for Relief and AK Steel's related complaint for declaratory relief. Under Plaintiffs' Proposed Plan, discovery on Phase II Claims would begin following the Court's ruling on the United States' motion on the appropriate scope and standard of review regarding the Section 7003 Order.

Phase III addresses Federal Clean Water Act, Resource Conservation and Recovery Act, and State supplemental water Claims that are related to Phase II Claims. Plaintiffs propose that Phase III Claims be litigated after the Court's final ruling resolving Phase II issues, because the

Court's resolution of Phase II could affect the scope of relief required under Phase III. In Phase III, the Court would address additional appropriate relief at AK Steel's Middletown facility. To the extent that litigation of Phase I is ongoing after the completion of Phase II, the Plaintiffs propose that the Phase III schedule be merged with the Phase I schedule and that the Parties at that time submit a revised schedule for Phases I and III.

Phase IV consists of the State of Ohio's Claims One, Four, and Seven that have been stayed sua sponte by Order of the Court. Ohio reserves its rights to contest that Order. The submission of this Proposed Plan is not meant by Ohio to be construed as a waiver of its rights to contest the Order. If at any time the Court issues an Order lifting the stay of Claims One, Four, and Seven, Plaintiffs propose that at that time the Parties submit a schedule for litigation of these Phase IV Claims.

I. **THE UNITED STATES' CLAIMS FOR RELIEF ONE, TWO, AND SIX;
THE STATE OF OHIO'S CLAIMS ELEVEN, FIFTEEN, AND EIGHTEEN
THROUGH TWENTY-FOUR; AND THE SIERRA CLUB/NATURAL
RESOURCE DEFENSE COUNCIL'S CLAIMS ONE AND TWO (PHASE I)**³

This Phase addresses discrete Federal Clean Air Act, Clean Water Act, and State supplemental water and hazardous waste Claims that are unrelated to the United States' Eighth Claim for Relief and that have not been stayed by the Court. Phase I of this Proposed Plan assumes that the State of Ohio and the Sierra Club/Natural Resource Defense Council will be granted Intervenor Plaintiff status. Plaintiffs recognize that the Court has not ruled on pending motions to intervene, and that certain aspects of Phase I of this Proposed Plan may require revision depending upon the Court's ruling.

A. **PROPOSED DISCOVERY DEADLINES AND PROCEDURE FOR
PHASE I**

Plaintiffs propose that discovery on Phase I Claims commence following the Court's

entry of a final scheduling order on Phase I. Plaintiffs agree that discovery may be needed on each of these Claims, including the following Claims set forth in the United States' First Amended Complaint, and the State of Ohio's First Amended Complaint:

1. First Claim for Relief – Alleged Ohio State Implementation Plan Particulate Matter Violations under the Clean Air Act – As set forth in the United States' First Amended Complaint, this claim relates to AK Steel's sinter plant, which is alleged to have emitted particulate matter on diverse occasions from at least September 29, 1995 to at least April 24, 1996, in violation of OAC Rule 3745-17-11 and, pursuant to 40 C.F.R. § 52.23, the Ohio SIP and the Clean Air Act.

2. Second Claim for Relief – Alleged Benzene Coke National Emission Standards for Hazardous Air Pollutants ("NESHAP") Violations under the Clean Air Act – As set forth in the United States' First Amended Complaint, this claim relates to AK Steel's Coke By-Product Recovery Plant, and associated process vessels, tar-storage tanks and tar-intercepting sumps, which are alleged to have leaked organic chemical emissions, or to have exhibited system abnormalities, for which AK Steel allegedly failed to initiate and/or complete repairs in a timely manner pursuant to 40 C.F.R. Part 61, Subpart L and the Clean Air Act on four occasions, once during 1992, once during 1993, once during 1994, and once during 1996.

3. Sixth Claim for Relief – Alleged failure to meet Pretreatment Standards under the Clean Water Act – The United States alleges that AK Steel violated the terms and conditions of its Industrial User Permit issued by the City of Middletown, Ohio, as set forth in Exhibit C to the United States' First Amended Complaint, by exceeding the applicable daily limits regarding the acidity and alkalinity of discharges from AK Steel's Middletown Works to the City of Middletown's publicly owned treatment works on five days between December 28, 1995 and

June 9, 1996.

In setting forth the above matters on which discovery may be needed, the United States does not intend to delimit or modify any of the Claims set forth in its First Amended Complaint.

4. Ohio's Eleventh Claim for Relief - Alleged failure to meet Pretreatment Standards under the Clean Water Act – Ohio alleges that AK Steel violated the terms and conditions of its Industrial User Permit issued by the City of Middletown, Ohio, as set forth in Attachment D to Ohio's First Amended Complaint, by exceeding the applicable daily limits regarding the acidity and alkalinity of discharges from AK Steel's Middletown Works to the City of Middletown's publicly owned treatment works on five days between April and December 1996.

5. Ohio's Fifteenth Claim for Relief - Alleged failure to meet Pretreatment Standards under Ohio Revised Code Chapter 6111. This claim asserts the same factual allegations in Ohio's Eleventh Claim for Relief, but it is based on Ohio, not federal, law.

6. Ohio's Eighteenth Claim for Relief – Alleged illegal discharges of pollutants into groundwaters of the State of Ohio – Ohio alleges that AK Steel has illegally discharged pollutants into groundwaters of the State on several occasions since at least January 24, 1996. The discharges consist of coke oven gas and/or coal tar and have resulted in benzene contamination of the groundwater and other underground areas. The illegal discharges are alleged to be in violation of Ohio Revised Code Chapter 6111.

7. Ohio's Nineteenth Claim for Relief – Alleged illegal operation of a hazardous waste facility, and alleged illegal disposal and/or storage of hazardous waste at an unpermitted hazardous waste facility in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel has illegally stored and/or disposed of hazardous

wastes in the form of coking tar sludge from at least November 21, 1989 until at least June 13, 2000 without a permit.

8. Ohio's Twentieth Claim for Relief – Alleged illegal operation of a hazardous waste unit without a permit in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel operated an underground injection well without a permit because AK Steel failed to describe all of its waste management units and failed to perform corrective action at its facility. Ohio alleges that these violations occurred from at least October 7, 1991 and continue to the present.

9. Ohio's Twenty-First Claim for Relief – Alleged failure to have a written closure plan for a hazardous waste storage pile in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel managed hazardous wastes at a coking tar sludge storage pile from at least November 21, 1989 until at least June 13, 2000. Ohio alleges that AK Steel failed to have a written closure plan from at least November 21, 1989 to at least May 6, 1991 demonstrating how the storage pile would be closed in a manner that controlled, minimized or eliminated the threat the storage pile presented to human health and/or the environment.

10. Ohio's Twenty-Second Claim for Relief – Alleged failure to have secondary containment on hazardous waste storage tanks in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel managed hazardous waste spent pickle liquor in a storage tank system from at least November 21, 1989 to at least March 27, 1995. Ohio alleges that AK Steel failed to have adequate secondary containment for its storage tank system from at least November 21, 1989 to at least March 8, 1991, and failed to keep secondary containment for its storage tank system free of gaps and cracks from at least

February 15, 1994 to at least March 27, 1995. Ohio alleges that these failures resulted in AK Steel causing, permitting or allowing spent pickle liquor to be released to the environment on, or a date prior to, November 2, 1990.

11. Ohio's Twenty-Third Claim for Relief – Alleged failure to prevent spills and overflows of hazardous waste from a hazardous waste storage tank system in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel failed to prevent the spill of spent pickle liquor from its storage tank systems on several dates from at least 1989 through at least 1997. Ohio alleges that AK Steel failed to use the appropriate controls and practices to prevent such spills.

12. Ohio's Twenty-Fourth Claim for Relief – Alleged failure to inspect hazardous waste storage tank system in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel failed to inspect its spent pickle liquor storage tank system at least once each operating day on several dates from at least January 1992 to at least April 1992.

1. Proposed Deadline for Initial Disclosures

Plaintiffs propose that initial disclosures, as required by Fed. R. Civ. P. 26(a)(1), be made no later than thirty (30) days after the Court's entry of a final scheduling order on Phase I.⁴

2. Proposed Fact and Expert Discovery Deadlines

Plaintiffs propose that disclosure of expert testimony, as provided in Fed. R. Civ. P. 26(a)(2)(A), (B) and (C), be made no later than five (5) months (150 days) after the Court's entry of a final scheduling order on Phase I, and that the fact and expert discovery cut-off occur nine (9) months (270 days) after the Court's entry of a final scheduling order on Phase I.

Plaintiffs do not believe that discovery on these Claims should be conducted in phases

that are limited to, or focused on, particular issues.

3. Changes to the Limitations on Discovery under the Federal Rules of Civil Procedure or under the Local Rules

Plaintiffs anticipate that no changes to the limitations on discovery set forth in Fed. R. Civ. P. 30, 33, 34, and 36, regarding depositions, interrogatories, requests for production of documents, and requests for admissions are necessary, with the exception that Plaintiffs submit that the 10 deposition limit set forth in Fed. R. Civ. P. 30 be increased to a limit of 50 depositions for all Phases of this case combined.⁵ While Plaintiffs believe at this time that a total of 50 depositions may be sufficient for all Phases of this case, many of the claims raise complicated scientific and technical issues and Plaintiffs reserve their rights to seek additional modifications to the discovery rules permitted by the Fed. R. Civ. P. and S.D. Ohio Local Rules, whether through leave of Court or the Parties' stipulations, or both.

Plaintiffs reserve their right to seek protective orders from this Court pursuant to Rule 26 of the Federal Rules of Civil Procedure should circumstances so warrant.

B. PROPOSED DATE FOR FILING ALL DISPOSITIVE PRE-TRIAL MOTIONS ON PHASE I ISSUES

Plaintiffs propose that the deadline for filing of dispositive motions pursuant to Fed. R. Civ. P. 56 be set for sixty (60) days after the fact discovery cut-off date for Phase I.

C. PROPOSED DATE FOR FILING A JOINT FINAL PRE-TRIAL ORDER ON PHASE I

Plaintiffs propose that a Joint Final Pre-Trial Order be filed thirty (30) days before trial on Phase I.

D. THE DATE PLAINTIFFS BELIEVE THEY WILL BE READY FOR TRIAL ON PHASE I

Plaintiffs believe that they will be ready for trial on Phase I ninety (90) days following

the date for filing of dispositive motions, pursuant to Fed. R. Civ. P. 56, as provided in item B, above.

A proposed Order setting forth the above deadlines for Phase I is attached.

II. THE UNITED STATES' EIGHTH CLAIM FOR RELIEF AND AK STEEL'S COMPLAINT (PHASE II)

Claim Eight of the United States' First Amended Complaint alleges AK Steel's failure to comply with the Section 7003 Order. Phase II would also encompass a complaint filed on August 22, 2000, by AK Steel raising claims related to the Section 7003 Order.⁶ [CHRIS, CAN/SHOULD WE INCLUDE A SENTENCE SAYING THAT THE COURT NEED NOT RULE ON AK STEEL'S COMPLAINT BECAUSE THE ISSUES WILL BE DECIDED UNDER CLAIM EIGHT?]

A. EPA'S MOTION FOR A STAY OF CLAIM EIGHT PENDING EPA'S REVIEW OF AK STEEL'S SUBMISSIONS CONCERNING THE SECTION 7003 ORDER

Concurrent with the filing of Plaintiffs' Proposed Plan, the United States is moving for a stay of Claim Eight pending EPA's review of AK Steel's submissions to EPA concerning the Section 7003 Order. As previously stated, on March 1, 2002, EPA stayed the Section 7003 Order and provided AK Steel an opportunity to confer with the Agency on the Order and submit any information regarding any concerns AK Steel may have regarding the Order. Following the opportunity to confer and AK Steel's submission of information, EPA will consider and respond to any issues and information raised by AK Steel. At the conclusion of this administrative process (in an estimated three to six months), EPA intends to expand the administrative record to include any relevant information, and, if necessary or appropriate, modify or withdraw the Section 7003 Order. EPA's motion seeks a stay of Claim Eight from the Court pending

completion of this process.

B. EPA'S MOTION FOR A RULING ON THE APPROPRIATE SCOPE AND STANDARD OF REVIEW

Following EPA's review of AK Steel's submissions, the United States will, if appropriate, ask the Court to lift any stay of Claim Eight (unless EPA determines that the Section 7003 Order should be withdrawn). Concurrently, the United States would move for a ruling on the appropriate scope and standard of review of specific issues in Phase II. This motion would address the specific issues that the United States maintains should be reviewed on the basis of the administrative record under the arbitrary and capricious standard set forth in 5 U.S. C. § 706.

C. PROPOSED DISCOVERY DEADLINES AND PROCEDURE FOR PHASE II

1. Proposed Deadline for Initial Disclosures

Plaintiffs propose that initial disclosures, as required by Fed. R. Civ. P. 26(a)(1), be made no later than thirty (30) days after the Court's ruling on the United States' motion on the appropriate scope and standard of review.

2. Proposed Fact and Expert Discovery Deadlines

Because the United States maintains that certain Phase II issues are subject to review on the certified administrative record for the Section 7003 Order applying the arbitrary and capricious standard set forth in 5 U.S.C. § 706, the United States maintains that only limited extra-record discovery is necessary in Phase II. Plaintiffs propose that the disclosure of expert testimony, as provided in Fed. R. Civ. P. 26(a)(2)(A), (B) and (C), be made no later than three (3) months (90 days) after the Court's ruling on the United States' motion on the appropriate scope and standard of review, and that the fact and expert discovery cut-off occur five (5) months (150 days) after the Court's ruling on the United States' motion on the appropriate scope and standard of review. In the event that the Court determines that Phase II issues are not subject

to review on the certified administrative record, the Plaintiffs reserve the right to request the Court to modify or amend this Proposed Plan to increase the time period for fact discovery.

3. Changes to the Limitations on Discovery under the Federal Rules of Civil Procedure or under the Local Rules

Because the United States maintains that **certain** Phase II issues are subject to review on the certified administrative record for the Section 7003 Order applying the arbitrary and capricious standard of review, the Parties should not need extensive discovery in Phase II. Plaintiffs therefore anticipate that no changes to the limitations on discovery set forth in Fed. R. Civ. P. 30, 33, 34, and 36, regarding depositions, interrogatories, requests for production of documents, and requests for admissions are necessary for purposes of Phase II.⁷ Plaintiffs recognize that Fed. R. Civ. P. 33, 36, and the Ohio Local Rules entitle each "party" to 40 requests for admissions and 25 interrogatories. Plaintiffs intend, however, to coordinate to avoid duplicative discovery.

Plaintiffs reserve the right to seek any modifications to the discovery rules that may be permitted under the Fed. R. Civ. P. and S.D. Ohio Local Rules, either through leave of the Court or the Parties' stipulations. In addition, Plaintiffs reserve their right to seek protective orders from this Court pursuant to Rule 26 of the Federal Rules of Civil Procedure should circumstances so warrant.

D. PROPOSED DEADLINES FOR FILING ALL DISPOSITIVE PRE-TRIAL MOTIONS ON PHASE II ISSUES

The Plaintiffs propose that the deadline for filing of dispositive motions pursuant to Fed. R. Civ. P. 56 be set for thirty (30) days after the fact discovery cut-off date for Phase II.

E. PROPOSED DATE FOR FILING JOINT FINAL PRE-TRIAL ORDER ON PHASE II

The Plaintiffs propose that a Joint Final Pre-Trial Order be filed thirty (30) days before

trial on Phase II.

F. THE DATE THE PLAINTIFFS BELIEVE THEY WILL BE READY FOR TRIAL ON PHASE II

The Plaintiffs believe that they will be ready for trial on Phase II ninety (90) days following the date for filing of dispositive motions, pursuant to Fed. R. Civ. P. 56, as provided in item D, above.

A proposed Order setting forth the above deadlines for Phase II is attached.

III. THE UNITED STATES' CLAIMS FOR RELIEF THREE, FOUR, FIVE, AND SEVEN; THE STATE OF OHIO'S CLAIMS EIGHT, NINE, TEN, TWELVE, THIRTEEN, FOURTEEN, SIXTEEN, SEVENTEEN, AND TWENTY-FIVE; AND THE SIERRA CLUB/NATURAL RESOURCES DEFENSE COUNCIL'S CLAIMS THREE, FOUR, FIVE, AND SEVEN (PHASE III)

Phase III addresses Federal Clean Water Act, Resource Conservation and Recovery Act, and State supplemental water Claims that are related to Claim Eight. Plaintiffs propose that Phase III Claims be litigated after the Court's final ruling resolving Phase II issues, because the Court's resolution of Phase II could affect the scope of relief required under Phase III. In Phase III, the Court would address additional appropriate relief at AK Steel's Middletown facility. To the extent that litigation of Phase I is ongoing after the completion of Phase II, Plaintiffs propose that the Phase III schedule be merged with the Phase I schedule and that the Parties at that time submit a revised schedule for Phases I and III.

Phase III of this Proposed Plan assumes that the State of Ohio and the Sierra Club/Natural Resource Defense Council will be granted Intervenor Plaintiff status. Plaintiffs recognize that the Court has not ruled on pending motions to intervene, and that certain aspects of Phase III of this Proposed Plan may require revision depending upon the Court's ruling.

A. PROPOSED DISCOVERY DEADLINES AND PROCEDURE FOR PHASE III⁸

Plaintiffs propose that discovery on these Claims commence following the Court's final ruling resolving Phase II issues. Plaintiffs agree that discovery may be needed on each of these Claims, including the following Claims set forth in the United States' First Amended Complaint and the State of Ohio's First Amended Complaint:

1. Third Claim for Relief – Alleged exceedance of National Pollutant Discharge Elimination System ("NPDES") Effluent Limitations under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Exhibit A to the United States' First Amended Complaint, the United States alleges that AK Steel discharged pollutants into navigable waters of the United States in excess of effluent limitations contained in AK Steel's 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

2. Fourth Claim for Relief – Alleged violation of NPDES Narrative Standards under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Exhibit B to the United States' First Amended Complaint, the United States alleges that AK Steel discharged pollutants in violation of one or more of the narrative standards set forth in its 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

3. Fifth Claim for Relief – Alleged violation of Clean Water Act prohibition on unpermitted discharges of PCBs – On diverse occasions, including, but not limited to the dates specified in the First Amended Complaint, AK Steel discharged pollutants, including but not limited to PCBs, into the waters of the United States from point sources at the facility without the authorization of an NPDES permit, in violation of the Clean Water Act.

4. Seventh Claim for Relief – Alleged releases of hazardous waste or hazardous constituents at AK Steel's facility – The United States alleges that there have been releases of hazardous wastes and hazardous constituents into the environment from AK Steel's facility, and

that as a result, AK Steel is required to perform corrective action at the facility to remedy releases of hazardous wastes and hazardous constituents, and to prevent future releases, in accordance with Section 3008(h) of RCRA, 42 U.S.C. § 6928(h).

In setting forth the above matters on which discovery may be needed, the United States does not intend to delimit or modify any of the Claims set forth in its First Amended Complaint.

5. Ohio's Eighth Claim for Relief – Alleged exceedance of National Pollutant Discharge Elimination System (“NPDES”) Effluent Limitations under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Attachment B to Ohio's First Amended Complaint, Ohio alleges that AK Steel discharged pollutants into navigable waters of the United States in excess of effluent limitations contained in AK Steel's 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

6. Ohio's Ninth Claim for Relief - Alleged violation of NPDES Narrative Standards under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Attachment C to Ohio's First Amended Complaint, Ohio alleges that AK Steel discharged pollutants in violation of one or more of the narrative standards set forth in its 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

7. Ohio's Tenth Claim for Relief – Alleged violation of Clean Water Act prohibition on unpermitted discharges of PCBs – On diverse occasions, including, but not limited to the dates specified in Ohio's First Amended Complaint, AK Steel discharged pollutants, including but not limited to PCBs, into the waters of the United States from point sources at the facility without the authorization of an NPDES permit, in violation of the Clean Water Act.

8. Ohio's Twelfth Claim for Relief - Alleged exceedance of National Pollutant

Discharge Elimination System ("NPDES") Effluent Limitations under Ohio Revised Code Chapter 6111. This claim asserts the same factual allegations in Ohio's Eighth Claim for Relief, but it is based on Ohio, not federal, law.

9. Ohio's Thirteenth Claim for Relief – This claim is a duplicate of Ohio's Ninth Claim for Relief with the exception that it is being brought under Ohio Revised Code Chapter 6111 rather than under the Clean Water Act.

10. Ohio's Fourteenth Claim for Relief – This claim is a duplicate of Ohio's Tenth Claim for Relief with the exception that it is being brought under Ohio Revised Code Chapter 6111 rather than under the Clean Water Act.

11. Ohio's Sixteenth Claim for Relief – Alleged violation of Ohio's water quality standards brought under Ohio Revised Code Chapter 6111 and the regulations adopted thereunder. Ohio alleges that AK Steel has discharged pollutants, including but not limited to PCBs, into waters of the State. Ohio alleges that these illegal discharges have occurred as described in Attachment C to Ohio's First Amended Complaint.

12. Ohio's Seventeenth Claim for Relief – Alleged violation of the Permit to Install requirements of Ohio Revised Code Chapter 6111 and the regulations adopted thereunder. Ohio alleges that AK Steel installed a trenching system with other treatment devices without first obtaining a Permit to Install. Ohio alleges that this illegal conduct occurred from at least December 1997 and to at least the present.

13. Ohio's Twenty-Fifth Claim for Relief – Alleged violation of Ohio's general nuisance statute, Ohio Revised Code Chapter 3767. Ohio alleges that AK Steel has corrupted and/or rendered unwholesome and/or impure Dick's Creek, the Great Miami river, and unnamed tributaries of Dick's Creek and the Great Miami River to the prejudice and injury of others

and/or the public. Ohio alleges that this illegal conduct has occurred from at least 1995 to the present.

1. Proposed Deadline for Initial Disclosures

Plaintiffs propose that initial disclosures, as required by Fed. R. Civ. P. 26(a)(1), be made no later than thirty (30) days after the Court's final ruling resolving all Phase II issues.⁹

2. Proposed Fact and Expert Discovery Deadlines

Plaintiffs propose that disclosure of expert testimony, as provided in Fed. R. Civ. P. 26(a)(2)(A), (B) and (C), be made no later than six (6) months (180 days) after the Court's final ruling resolving all Phase II issues, and that the fact and expert discovery cut-off occur nine (9) months (270 days) after the Court's final ruling resolving all Phase II issues.

Plaintiffs do not believe that discovery on these Claims should be conducted in phases that are limited to, or focused on, particular issues.

3. Changes to the Limitations on Discovery under the Federal Rules of Civil Procedure or under the Local Rules

Plaintiffs anticipate that no changes to the limitations on discovery set forth in Fed. R. Civ. P. 30, 33, 34, and 36, regarding depositions, interrogatories, requests for production of documents, and requests for admissions are necessary, with the exception that Plaintiffs submit that the 10 deposition limit set forth in Fed. R. Civ. P. 30 be increased to 50.¹⁰ While Plaintiffs believe at this time that a total of 50 depositions may be sufficient for all Phases of this case, many of the claims raise complicated scientific and technical issues and Plaintiffs reserve their rights to seek additional modifications to the discovery rules permitted by the Fed. R. Civ. P., S.D. Ohio Local Rules, whether through leave of Court or the Parties' stipulations.

Plaintiffs reserve their right to seek protective orders from this Court pursuant to Rule 26 of the Federal Rules of Civil Procedure should circumstances so warrant.

**B. PROPOSED DATE FOR FILING ALL DISPOSITIVE PRE-TRIAL
MOTIONS ON PHASE III ISSUES**

Plaintiffs propose that the deadline for filing of dispositive motions pursuant to Fed. R. Civ. P. 56 be set for sixty (60) days after the fact discovery cut-off date.

**C. PROPOSED DATE FOR FILING A JOINT FINAL PRE-TRIAL ORDER
ON PHASE III**

Plaintiffs propose that a Joint Final Pre-Trial Order be filed thirty (30) days before trial on Phase III.

**D. THE DATE PLAINTIFFS BELIEVE THEY WILL BE READY FOR
TRIAL ON PHASE III**

Plaintiffs believe that they will be ready for trial on Phase III ninety (90) days following the date for filing of dispositive motions, pursuant to Fed. R. Civ. P. 56, as provided in item B, above.

A proposed Order setting forth the above deadlines is attached.

IV. THE STATE OF OHIO'S CLAIMS FOR RELIEF ONE, FOUR, AND SEVEN

Phase IV consists of the State of Ohio's Claims One, Four, and Seven that have been stayed sua sponte by Order of the Court. Ohio reserves its rights to contest that Order. The submission of this Proposed Plan is not meant by Ohio to be construed as a waiver of its rights to contest the Order. If at any time the Court issues an Order lifting the stay of Claims One, Four, and Seven, Plaintiffs propose that at that time the Parties submit a schedule for litigation of these Phase IV Claims.

Respectfully submitted,
THOMAS L. SANSONETTI
Assistant Attorney General
Environment and Natural Resources Division

ROBERT W. DARNELL
FRANCIS J. BIROS
Environmental Enforcement Section
Environment and Natural Resources Division
United States Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044
(202) 514-4162
(202) 616-6584 (fax)

CHRISTOPHER B. PEAK
Environmental Defense Section
Environment and Natural Resources Division
Environmental Defense Section
United States Department of Justice
P.O. Box 23986
Washington, D.C. 20026-3986
Tel: (202) 514-5693
Fax: (202) 514-8865

SALVADOR DOMINGUEZ
United States Attorney
Southern District of Ohio

GERALD F. KAMINSKI (Bar No. 0012532)
Assistant United States Attorney
221 East Fourth Street
Suite 400
Cincinnati, Ohio 45202
(513) 684-3711

OF COUNSEL:
ROBERT S. GUENTHER
JAMES MORRIS
United States Environmental Protection
Agency, Region 5
77 West Jackson Boulevard (C-14J)
Chicago, Illinois 60604-3590

BETTY D. MONTGOMERY
OHIO ATTORNEY GENERAL

DAVID G. COX (Ohio 0042724)
Trial Attorney
LORI A. MASSEY (Ohio 0047226)
DOUGLAS A. CURRAN (Ohio 0065750)
Assistant Ohio Attorneys General
30 E. Broad Street, 25th Floor
Columbus, OH 43215-3428
(614) 466-2766
Counsel for the State of Ohio

D. DAVID ALTMAN CO.
D. DAVID ALTMAN
Ohio State Bar #0021457

D. DAVID ALTMAN
Trial Attorney
15 East Eighth Street, Suite 200W
Cincinnati, OH 45202
Telephone: 513/721-2180

LAW OFFICES OF CHARLES STEVENS
CRANDALL
CHARLES S. CRANDALL
1800 Santa Barbara Street, 3rd Floor
San Luis Obispo, CA 93401
Telephone: 805/544-4787
805/543-1081 (fax)

Attorneys for Intervenor Plaintiff applicants Sierra Club
and Natural Resources Defense Council

¹ As explained in Section II, the United States is moving for a stay of Claim Eight pending EPA's review of AK Steel's submissions to EPA concerning the Section 7003 Order.

² Order of November 28, 2001 at 2 (staying only the State of Ohio's First, Fourth, and Seventh Claims for Relief); Transcript of Proceedings in Chambers, November 8, 2001 at 46 ("there will be no stay in regard to any of the federal claims in the case at this time.").

³ On May 31, 2001, the United States, the State of Ohio, and AK Steel submitted a Joint Proposed Plan for the Conduct of Litigation and Proposed Scheduling Order regarding the United States' Claims for Relief One, Two, Three, Four, and Six. The instant Proposed Plan is intended to supercede the Parties' previous submission.

⁴ The United States, the State of Ohio, and AK Steel have already complied with the initial disclosure requirements with respect to the United States' Claims for Relief One, Two, Three, Four,

and Six.

⁵ Plaintiffs recognize that Fed. R. Civ. P. 33, 36, and the Ohio Local Rules entitle each "party" to 40 requests for admissions and 25 interrogatories. Plaintiffs intend, however, to coordinate to avoid duplicative discovery.

⁶ On March 8, 2001, the Court consolidated AK Steel's action with the instant case.

⁷ As discussed, however, Plaintiffs maintain that substantial additional depositions will be necessary for purposes of the remaining Claims in this matter.

⁸ Because the Court's resolution of Phase II issues could affect the scope of relief required under Phase III, Plaintiffs reserve the right to request the Court to modify or amend this Proposed Plan to adjust Phase III discovery deadlines and procedure.

⁹ The United States, the State of Ohio, and AK Steel have already complied with the initial disclosure requirements with respect to the United States' Claims for Relief One, Two, Three, Four, and Six.

¹⁰ Plaintiffs recognize that Fed. R. Civ. P. 33, 36, and the Ohio Local Rules entitle each "party" to 40 requests for admissions and 25 interrogatories. Plaintiffs intend, however, to coordinate to avoid duplicative discovery.

RELEASED
DATE 11/27/18
RIN # 2018-00461
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IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

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|-------------------------------|---|-----------------------------|
| _____ |) | |
| THE UNITED STATES OF AMERICA, |) | |
| |) | |
| Plaintiff, |) | CIVIL ACTION NO. C-1-00530 |
| |) | |
| and |) | JUDGE HERMAN J. WEBER |
| |) | |
| THE STATE OF OHIO, |) | |
| |) | |
| Intervenor Plaintiff, |) | |
| |) | Joint Proposed Plan for the |
| v. |) | Conduct of Litigation and |
| |) | Proposed Scheduling Orders |
| AK STEEL CORPORATION, |) | |
| |) | |
| Defendant. |) | |
| _____ |) | |

As directed by the Court during Proceedings on November 7, 2001, counsel for the United States, State of Ohio, Sierra Club and Natural Resources Defense Council, and AK Steel (collectively, the "Parties") have prepared, and hereby submit, this Joint Proposed Plan for the Conduct of Litigation and Proposed Scheduling Order ("Joint Proposed Plan") regarding the United States' Eighth Claim for Relief and all other Claims in this matter.

During Proceedings on November 7, 2001, the Court severed the Eighth Claim for Relief from all other Claims for Relief in the United States' First Amended Complaint and stated that it would first address that claim. **CITE WRITTEN ORDER** The Court directed counsel for the United States to prepare a draft case management plan for the Eighth Claim for Relief and all other Claims and circulate it to the Parties for their review. The following Joint Proposed Plan contains three Parts. Part I addresses the United States' Eighth Claim for Relief. Part II addresses all other Claims in this matter with the exception of the State of Ohio's Claims for

Relief One, Four, and Seven. Part III addresses the State of Ohio's Claims for Relief One, Four, and Seven.

I. THE UNITED STATES' EIGHTH CLAIM FOR RELIEF AND AK STEEL'S COMPLAINT

The United States' Eighth Claim for Relief ("Claim Eight") alleges AK Steel's failure to comply with the August 17, 2000 Administrative Order that the United States Environmental Protection Agency ("EPA") issued to AK Steel pursuant to Section 7003 of the Resource Conservation and Recovery Act, 42 U.S.C. § 6973 ("Administrative Order"). In a complaint filed on August 22, 2000, AK Steel raised claims related to the Administrative Order. On March 8, 2001, the Court consolidated AK Steel's action with the instant case. The claims raised by AK Steel in its complaint go to the validity of EPA's Administrative Order.

The Parties propose that litigation of Claim Eight address the following issues:

- (1) the validity of EPA's Administrative Order;
- (2) whether AK Steel failed to comply with the Administrative Order;
- (3) the appropriate injunctive relief for AK Steel's failure to comply with the Administrative Order;
- (4) the appropriate civil penalty for AK Steel's failure to comply with the Administrative Order.

A. PROPOSED DISCOVERY DEADLINES AND PROCEDURE FOR CLAIM EIGHT

1. Proposed Deadline for Initial Disclosures

The Parties propose that initial disclosures, as required by Fed. R. Civ. P. 26(a)(1), be made no later than thirty (30) days after the Court's entry of a final scheduling order on Claim Eight.

2. Proposed Fact and Expert Discovery Deadlines

The United States maintains that the majority of issues concerning the validity of the Administrative Order are subject to review on the administrative record for the Administrative Order applying the arbitrary and capricious standard set forth in 5 U.S.C. § 706. Accordingly, only limited extra-record discovery is necessary on Claim Eight. The Parties propose that the disclosure of expert testimony, as provided in Fed. R. Civ. P. 26(a)(2)(A), (B) and (C), be made no later than three (3) months (90 days) after the Court's entry of a final scheduling order on Claim Eight, and that the fact discovery cut-off occur five (5) months (150 days) after the Court's entry of a final scheduling order on Claim Eight.

3. Changes to the Limitations on Discovery under the Federal Rules of Civil Procedure or under the Local Rules

Because the majority of issues concerning the validity EPA's issuance of the Administrative Order are subject to review on the Administrative Record applying the arbitrary and capricious standard of review, the Parties should not need extensive discovery on Claim Eight. The United States therefore anticipates that no changes to the limitations on discovery set forth in Fed. R. Civ. P. 30, 33, 34, and 36, regarding depositions, interrogatories, requests for production of documents, and requests for admissions are necessary for purposes of Claim Eight. It is the position of Plaintiff, United States, and Intervenor Plaintiff, State of Ohio, that they are each entitled to 40 requests for admissions and 25 interrogatories as prescribed by Fed. R. Civ. P. 33, 34, and 36. The Parties reserve the right to seek any modifications to the discovery rules that may be permitted under the Fed. R. Civ. P. and S.D. Ohio Local Rules, either through leave of the Court or the Parties' stipulations.

All Parties reserve their right to seek protective orders from this Court pursuant to Rule 26 of the Federal Rules of Civil Procedure should circumstances so warrant.

**B. PROPOSED DEADLINES FOR FILING ALL DISPOSITIVE PRE-TRIAL
MOTIONS ON CLAIM EIGHT**

The Parties propose that the deadline for filing of dispositive motions pursuant to Fed. R. Civ. P. 56 be set for thirty (30) days after the fact discovery cut-off date for Claim Eight issues.

**C. PROPOSED DEADLINE FOR AMENDMENTS TO THE PLEADINGS
FOR CLAIM EIGHT**

The Parties propose that the deadline for amendments to the pleadings for Claim Eight be set at sixty (60) days before the cut-off date for all fact discovery on Claim Eight.

**D. PROPOSED DATE FOR FILING JOINT FINAL PRE-TRIAL ORDER ON
CLAIM EIGHT**

The Parties propose that a Joint Final Pre-Trial Order be filed thirty (30) days before trial on Claim Eight.

**E. THE DATE THE PARTIES BELIEVE THEY WILL BE READY FOR
TRIAL ON CLAIM EIGHT**

The Parties believe that they will be ready for trial on Claim Eight ninety (90) days following the date for filing of dispositive motions, pursuant to Fed. R. Civ. P. 56, as provided in item B, above.

A proposed Scheduling Order setting forth the above deadlines is attached.

**II. THE UNITED STATES' CLAIMS FOR RELIEF ONE THROUGH SEVEN, THE
STATE OF OHIO'S CLAIMS AND THE SIERRA CLUB'S CLAIMS**

1

A. PROPOSED DISCOVERY DEADLINES AND PROCEDURE

The Parties propose that discovery on these Claims commence following the Court's final ruling resolving Claim Eight issues. The Parties agree that discovery may be needed on each of

these Claims, including the following federal Claims set forth in the United States' First Amended Complaint:

1. First Claim for Relief – Alleged Ohio State Implementation Plan Particulate Matter Violations under the Clean Air Act – As set forth in the United States' First Amended Complaint, this claim relates to AK Steel's sinter plant, which is alleged to have emitted particulate matter on diverse occasions from at least September 29, 1995 to at least April 24, 1996, in violation of OAC Rule 3745-17-11 and, pursuant to 40 C.F.R. § 52.23, the Ohio SIP and the Clean Air Act.

2. Second Claim for Relief – Alleged Benzene Coke National Emission Standards for Hazardous Air Pollutants ("NESHAP") Violations under the Clean Air Act – As set forth in the United States' First Amended Complaint, this claim relates to AK Steel's Coke By-Product Recovery Plant, and associated process vessels, tar-storage tanks and tar-intercepting sumps, which are alleged to have leaked organic chemical emissions, or to have exhibited system abnormalities, for which AK Steel allegedly failed to initiate and/or complete repairs in a timely manner pursuant to 40 C.F.R. Part 61, Subpart L and the Clean Air Act on four occasions, once during 1992, once during 1993, once during 1994, and once during 1996.

3. Third Claim for Relief – Alleged exceedance of National Pollutant Discharge Elimination System ("NPDES") Effluent Limitations under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Exhibit A to the United States' First Amended Complaint, the United States alleges that AK Steel discharged pollutants into navigable waters of the United States in excess of effluent limitations contained in AK Steel's 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

4. Fourth Claim for Relief – Alleged violation of NPDES Narrative Standards

under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Exhibit B to the United States' First Amended Complaint, the United States alleges that AK Steel discharged pollutants in violation of one or more of the narrative standards set forth in its 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

5. Fifth Claim for Relief – Alleged violation of Clean Water Act prohibition on unpermitted discharges of PCBs – On diverse occasions, including, but not limited to the dates specified in the First Amended Complaint, AK Steel discharged pollutants, including but not limited to PCBs, into the waters of the United States from point sources at the facility without the authorization of an NPDES permit, in violation of the Clean Water Act.

6. Sixth Claim for Relief – Alleged failure to meet Pretreatment Standards under the Clean Water Act – The United States alleges that AK Steel violated the terms and conditions of its Industrial User Permit issued by the City of Middletown, Ohio, as set forth in Exhibit C to the United States' First Amended Complaint, by exceeding the applicable daily limits regarding the acidity and alkalinity of discharges from AK Steel's Middletown Works to the City of Middletown's publicly owned treatment works on five days between December 28, 1995 and June 9, 1996.

7. Seventh Claim for Relief – Alleged releases of hazardous waste or hazardous constituents at AK Steel's facility – The United States alleges that there have been releases of hazardous wastes and hazardous constituents into the environment from AK Steel's facility, and that as a result, AK Steel is required to perform corrective action at the facility to remedy releases of hazardous wastes and hazardous constituents, and to prevent future releases, in accordance with Section 3008(h) of RCRA, 42 U.S.C. § 6928(h).

In setting forth the above matters on which discovery may be needed, the United States

does not intend to delimit or modify any of the Claims set forth in its First Amended Complaint.

NEED TO INCLUDE SUMMARIES OF ALL OTHER CLAIMS EXCEPT STATE'S CLAIMS FOR RELIEF ONE, FOUR, AND SEVEN.

1. Proposed Deadline for Initial Disclosures

The Parties propose that initial disclosures, as required by Fed. R. Civ. P. 26(a)(1), be made no later than thirty (30) days after the Court's final ruling resolving all Claim Eight issues.²

2. Proposed Fact and Expert Discovery Deadlines

The Parties propose that disclosure of expert testimony, as provided in Fed. R. Civ. P. 26(a)(2)(A), (B) and (C), be made no later than six (6) months (180 days) after the Court issues a final ruling resolving all Claim Eight issues, and that the fact discovery cut-off occur nine (9) months (270 days) after the Court issues a final ruling resolving all Claim Eight issues.

The Parties do not believe that discovery on these Claims should be conducted in phases that are limited to, or focused on, particular issues.

3. Changes to the Limitations on Discovery under the Federal Rules of Civil Procedure or under the Local Rules

It is the position of Plaintiff, United States, and Intervenor Plaintiff, State of Ohio, that they are each entitled to 40 requests for admissions and 25 interrogatories as prescribed by Fed. R. Civ. P. 33, 34, and 36. The Parties anticipate that no changes to the limitations on discovery set forth in Fed. R. Civ. P. 30, 33, 34, and 36, regarding depositions, interrogatories, requests for production of documents, and requests for admissions are necessary, with the exception that the Parties stipulate that the 10 deposition limit set forth in Fed. R. Civ. P. 30 be increased to 20. While the Parties believe at this time that 20 depositions will be sufficient, the Parties reserve their rights to seek additional modifications to the discovery rules permitted by the Fed. R. Civ. P., S.D. Ohio Local Rules, whether through leave of Court or the Parties' stipulations.

All Parties reserve their right to seek protective orders from this Court pursuant to Rule 26 of the Federal Rules of Civil Procedure should circumstances so warrant.

B. PROPOSED DATE FOR FILING ALL DISPOSITIVE PRE-TRIAL MOTIONS

The Parties propose that the deadline for filing of dispositive motions pursuant to Fed. R. Civ. P. 56 be set for sixty (60) days after the fact discovery cut-off date.

C. PROPOSED DEADLINE FOR AMENDMENTS TO THE PLEADINGS

The Parties propose that the deadline for amendments to the pleadings be set at sixty (60) days after the cut-off date for all fact discovery.

D. PROPOSED DATE FOR FILING A JOINT FINAL PRE-TRIAL ORDER

The Parties propose that a Joint Final Pre-Trial Order be filed thirty (30) days before trial.

E. THE DATE THE PARTIES BELIEVE THEY WILL BE READY FOR TRIAL

The Parties believe that they will be ready for trial one hundred and twenty (120) days following the date for filing of dispositive motions, pursuant to Fed. R. Civ. P. 56, as provided in item B, above.

A proposed Scheduling Order setting forth the above deadlines is attached.

III. THE STATE OF OHIO'S CLAIMS FOR RELIEF ONE, FOUR, AND SEVEN

During Proceedings on November 7, 2001, the Court severed the State of Ohio's Claims for Relief One, Four, and Seven, and stayed all litigation as to these Claims. The Parties propose that following the Court's lifting of the stay, the Parties submit a Proposed Case Management Plan as to those Claims.

Respectfully submitted,
JOHN C. CRUDEN
Acting Assistant Attorney General

Environment and Natural Resources Division

ROBERT W. DARNELL
FRANCIS J. BIROS
Trial Attorneys
Environment and Natural Resources Division
United States Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044
(202) 514-4162

SALVADOR DOMINGUEZ
United States Attorney
Southern District of Ohio

GERALD F. KAMINSKI (Bar No. 0012532)
Assistant United States Attorney
Room 220
Potter Stewart Federal Courthouse
5th and Walnut Streets
Cincinnati, Ohio 45202
(513) 684-3711

OF COUNSEL:
ROBERT S. GUENTHER
ORELIA MERCHANT
United States Environmental Protection
Agency, Region 5
77 West Jackson Boulevard (C-14J)
Chicago, Illinois 60604-3590

BETTY D. MONTGOMERY
OHIO ATTORNEY GENERAL

DAVID G. COX (Ohio 0042724)
Trial Attorney
LORI A. MASEY (Ohio 0047226)
DOUGLAS A. CURRAN (Ohio 0065750)
DAVID G. KERN (Ohio 0072421)
Assistant Ohio Attorneys General

30 E. Broad Street, 25th Floor
Columbus, OH 43215-3428
(614) 466-2766
Counsel for the State of Ohio

SIERRA CLUB SIGNATURE LINE

PAUL W. CASPER, JR. (Ohio 0010412)
Trial Attorney
STEPHEN N. HAUGHEY (Ohio 0010459)
FROST BROWN TODD LLC
201 E. Fifth Street, Suite 2200
Cincinnati, OH 45202
(513) 651-6800
Counsel for AK Steel Corporation

¹ On May 31, 2001, the United States, the State of Ohio, and AK Steel submitted a Joint Proposed Plan for the Conduct of Litigation and Proposed Scheduling Order regarding the United States' Claims for Relief One, Two, Three, Four, and Six. The instant Joint Proposed Plan is intended to supercede the Parties' previous submission.

² The United States, the State of Ohio, and AK Steel have already complied with the initial disclosure requirements, with respect to the United States' Claims for Relief One, Two, Three, Four, and Six.

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION**

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| THE UNITED STATES OF AMERICA, |) | |
| |) | |
| Plaintiff, |) | CIVIL ACTION NO. C-1-00530 |
| |) | |
| and |) | JUDGE HERMAN J. WEBER |
| |) | |
| THE STATE OF OHIO, |) | |
| |) | |
| Intervenor Plaintiff, |) | |
| |) | Joint Proposed Plan for the |
| v. |) | Conduct of Litigation and |
| |) | Proposed Scheduling Orders |
| AK STEEL CORPORATION, |) | |
| |) | |
| Defendant. |) | |
| <hr/> |) | |

As directed by the Court during Proceedings on November 7, 2001, counsel for the United States, State of Ohio, Sierra Club and Natural Resources Defense Council, and AK Steel (collectively, the "Parties") have prepared, and hereby submit, this Joint Proposed Plan for the Conduct of Litigation and Proposed Scheduling Order ("Joint Proposed Plan") regarding the United States' Eighth Claim for Relief and all other Claims in this matter.

During Proceedings on November 7, 2001, and by Order dated November 28, 2001, the Court severed the Eighth Claim for Relief from all other Claims for Relief in the United States' First Amended Complaint and stated that it would be treated separately and expeditiously. The Court directed counsel for the United States to prepare a draft case

management plan for the Eighth Claim for Relief and all other Claims and circulate it to the Parties for their review. The following Joint Proposed Plan contains ~~three~~four Phases.

Phase I addresses the United States' Eighth Claim for Relief and AK Steel's complaint for declaratory relief.

Phase II addresses discrete Clean Air Act, Clean Water Act, and State supplemental water and hazardous waste claims that have no potential for overlap with Phase I ~~issues~~ Claims. The Parties propose that Phase II Claims be litigated separately from, but concurrently with, Phase I Claims. In addition, the parties wish to advise the Court that the remedy for some of these Phase II Claims, if proven at trial by Plaintiffs, would require Defendant AK Steel to perform additional work on affected waters, including but not limited to Dick's Creek and the sediments therein, above and beyond the work that would be required by AK Steel if the United States is successful on its Phase I Claim.

Phase III addresses Claims that have a potential for overlap with Phase I issues. The Parties propose that these Claims be litigated after the Court's final ruling resolving all Phase I issues and, if discovery on the Phase II Claims is continuing, that discovery on these Phase III Claims be joined with the discovery on the Phase II Claims.

Phase IV Claims consist of Ohio's Counts 1, 4 and 7 that have been stayed by Order of the Court. Although Ohio does not agree that these Claims should be stayed and reserves its right to argue that the stay should be lifted, the parties propose that these Claims be stayed pending further Order of the Court.

1. THE UNITED STATES' EIGHTH CLAIM FOR RELIEF AND AK STEEL'S COMPLAINT (PHASE I)

The United States' Eighth Claim for Relief ("Claim Eight") alleges AK Steel's failure to comply with the August 17, 2000 Administrative Order that the United States Environmental Protection Agency ("EPA") issued to AK Steel pursuant to Section 7003 of the Resource Conservation and Recovery Act, 42 U.S.C. § 6973 ("Administrative Order"). In a complaint filed on August 22, 2000, AK Steel raised claims related to the Administrative Order. On March 8, 2001, the Court consolidated AK Steel's action with the instant case. The claims raised by AK Steel in its complaint go to the validity of EPA's Administrative Order.

The Parties propose that litigation of Claim Eight address the following issues:

- (1) the validity of EPA's Administrative Order;
- (2) whether AK Steel failed to comply with the Administrative Order;
- (3) the appropriate injunctive relief for AK Steel's failure to comply with the Administrative Order;
- (4) the appropriate civil penalty for AK Steel's failure to comply with the Administrative Order.

slow → A PROPOSED DISCOVERY DEADLINES AND PROCEDURE FOR PHASE I

1. Proposed Deadline for Initial Disclosures

The Parties propose that initial disclosures, as required by Fed. R. Civ. P. 26(a)(1), be made no later than thirty (30) days after the Court's entry of a final scheduling order on Phase I.

1. Proposed Fact and Expert Discovery Deadlines

The United States maintains that the majority of issues concerning the validity of the Administrative Order are subject to review on the administrative record for the Administrative Order applying the arbitrary and capricious standard set forth in 5 U.S.C. § 706. Accordingly,

Do we envision expert witnesses? (P. 30, 31, 32)

only limited extra-record discovery is necessary on Claim Eight. The Parties propose that the disclosure of expert testimony, as provided in Fed. R. Civ. P. 26(a)(2)(A), (B) and (C), be made no later than three (3) months (90 days) after the Court's entry of a final scheduling order on Phase I, and that the fact discovery cut-off occur five (5) months (150 days) after the Court's entry of a final scheduling order on Phase I. In the event that the Court determines that issues concerning the validity of the Administrative Order are not subject to record review on the administrative record, the Parties reserve the right to request the Court to modify or amend this

Joint Proposed Plan to increase the time period for fact discovery.

2. → **3. Changes to the Limitations on Discovery under the Federal Rules of Civil Procedure or under the Local Rules**

Because the majority of issues concerning the validity EPA's issuance of the Administrative Order are subject to review on the Administrative Record applying the arbitrary and capricious standard of review, the Parties should not need extensive discovery on Claim Eight. The United States therefore anticipates that no changes to the limitations on discovery set forth in Fed. R. Civ. P. 30, 33, 34, and 36, regarding depositions, interrogatories, requests for production of documents, and requests for admissions are necessary for purposes of Phase I.¹ It is the position of Plaintiff United States, Intervenor Plaintiff State of Ohio, and Intervenor Plaintiff applicant Sierra Club/Natural Resources Defense Council, that they are each entitled to 40 requests for admissions and 25 interrogatories as prescribed by Fed. R. Civ. P. 33, 34, and 36. The Parties reserve the right to seek any modifications to the discovery rules that may be permitted under the Fed. R. Civ. P. and S.D. Ohio Local Rules, either through leave of the Court or the Parties' stipulations.

All Parties reserve their right to seek protective orders from this Court pursuant to Rule

26 of the Federal Rules of Civil Procedure should circumstances so warrant.

**B. PROPOSED DEADLINES FOR FILING ALL DISPOSITIVE PRE-TRIAL
MOTIONS ON PHASE I ISSUES**

The Parties propose that the deadline for filing of dispositive motions pursuant to Fed. R. Civ. P. 56 be set for thirty (30) days after the fact discovery cut-off date for Phase I.

1. PROPOSED DATE FOR FILING JOINT FINAL PRE-TRIAL ORDER ON PHASE I

The Parties propose that a Joint Final Pre-Trial Order be filed thirty (30) days before trial on Claim Eight.

**D. THE DATE THE PARTIES BELIEVE THEY WILL BE READY FOR
TRIAL ON PHASE I**

The Parties believe that they will be ready for trial on Claim Eight ninety (90) days following the date for filing of dispositive motions, pursuant to Fed. R. Civ. P. 56, as provided in item B, above.

A proposed Scheduling Order setting forth the above deadlines is attached.

- II. - THE UNITED STATES' CLAIMS FOR RELIEF ONE, TWO, THREE AND SIX**
- THE STATE OF OHIO'S CLAIMS EIGHT, ELEVEN, TWELVE, FIFTEEN,
AND EIGHTEEN THROUGH TWENTY-FOUR**
- THE SIERRA CLUB/NATURAL RESOURCE DEFENSE COUNCIL'S CLAIMS
ONE, TWO, AND THREE (PHASE II)²**

This Phase addresses discrete Clean Air Act, Clean Water Act, and State supplemental water and hazardous waste claims that have no potential for overlap with Phase I issues. The Parties propose that these Claims be litigated separately from, but concurrently with, Phase I issues.

1. PROPOSED DISCOVERY DEADLINES AND PROCEDURE

The Parties propose that discovery on Phase II Claims commence following the Court's ~~final ruling resolving all Phase I issues~~ entry of a final scheduling order on Phase II. The Parties agree that discovery may be needed on each of these Claims, including the following federal Claims set forth in the United States' First Amended Complaint:

1. First Claim for Relief – Alleged Ohio State Implementation Plan Particulate Matter Violations under the Clean Air Act – As set forth in the United States' First Amended Complaint, this claim relates to AK Steel's sinter plant, which is alleged to have emitted particulate matter on diverse occasions from at least September 29, 1995 to at least April 24, 1996, in violation of OAC Rule 3745-17-11 and, pursuant to 40 C.F.R. § 52.23, the Ohio SIP and the Clean Air Act.

2. Second Claim for Relief – Alleged Benzene Coke National Emission Standards for Hazardous Air Pollutants ("NESHAP") Violations under the Clean Air Act – As set forth in the United States' First Amended Complaint, this claim relates to AK Steel's Coke By-Product Recovery Plant, and associated process vessels, tar-storage tanks and tar-intercepting sumps, which are alleged to have leaked organic chemical emissions, or to have exhibited system abnormalities, for which AK Steel allegedly failed to initiate and/or complete repairs in a timely manner pursuant to 40 C.F.R. Part 61, Subpart L and the Clean Air Act on four occasions, once during 1992, once during 1993, once during 1994, and once during 1996.

3. Third Claim for Relief – Alleged exceedance of National Pollutant Discharge Elimination System ("NPDES") Effluent Limitations under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Exhibit A to the United States' First

Amended Complaint, the United States alleges that AK Steel discharged pollutants into navigable waters of the United States in excess of effluent limitations contained in AK Steel's 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

4. Sixth Claim for Relief – Alleged failure to meet Pretreatment Standards under the Clean Water Act – The United States alleges that AK Steel violated the terms and conditions of its Industrial User Permit issued by the City of Middletown, Ohio, as set forth in Exhibit C to the United States' First Amended Complaint, by exceeding the applicable daily limits regarding the acidity and alkalinity of discharges from AK Steel's Middletown Works to the City of Middletown's publicly owned treatment works on five days between December 28, 1995 and June 9, 1996.

In setting forth the above matters on which discovery may be needed, the United States does not intend to delimit or modify any of the Claims set forth in its First Amended Complaint.

5. Ohio's Eighth Claim for Relief – Alleged exceedance of National Pollutant Discharge Elimination System ("NPDES") Effluent Limitations under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Attachment B to Ohio's First Amended Complaint, Ohio alleges that AK Steel discharged pollutants into navigable waters of the United States in excess of effluent limitations contained in AK Steel's 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

✓ 6. Ohio's Eleventh Claim for Relief - Alleged failure to meet Pretreatment Standards under the Clean Water Act – Ohio alleges that AK Steel violated

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the terms and conditions of its Industrial User Permit issued by the City of Middletown, Ohio, as set forth in Attachment D to Ohio's First Amended Complaint, by exceeding the applicable daily limits regarding the acidity and alkalinity of discharges from AK Steel's Middletown Works to the City of Middletown's publicly owned treatment works on five days between April and December 1996.

7. Ohio's Twelfth Claim for Relief - Alleged exceedance of National Pollutant Discharge Elimination System ("NPDES") Effluent Limitations under Ohio Revised Code Chapter 6111. This claim duplicates Ohio's Eighth Claim for Relief only it is based on Ohio, not federal, law.

✓ 8. Ohio's Fifteenth Claim for Relief - Alleged failure to meet Pretreatment Standards under Ohio Revised Code Chapter 6111. This claim duplicates Ohio's Eleventh Claim for Relief only it is based on Ohio, not federal, law.

✓ 9. Ohio's Eighteenth Claim for Relief - Alleged illegal discharges of pollutants into groundwaters of the State of Ohio - Ohio alleges that AK Steel has illegally discharged pollutants into groundwaters of the State on several occasions since at least January 24, 1996. The discharges consists of, ~~at least,~~ coke oven gas and/or coal tar and have resulted in, at least, benzene contamination of the groundwater and other underground areas. The illegal discharges are alleged to be in violation of Ohio Revised Code Chapter 6111.

✓ 10. Ohio's Nineteenth Claim for Relief - Alleged illegal operation of a hazardous waste facility, and alleged illegal disposal and/or storage of hazardous waste at an unpermitted hazardous waste facility in violation of Ohio Revised Code Chapter 3734

and the regulations adopted thereunder. Ohio alleges that AK Steel has illegally stored and/or disposed of hazardous wastes in the form of, at least, coking tar sludge from at least November 21, 1989 until at least June 13, 2000 without a permit.

11. Ohio's Twentieth Claim for Relief – Alleged illegal operation of a hazardous waste unit without a permit in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel operated an underground injection well without a permit because AK Steel failed to describe all of its waste management units and failed to perform corrective action at its facility. Ohio alleges that these violations occurred from at least October 7, 1991 and continuing to the present.

12. Ohio's Twenty-First Claim for Relief – Alleged failure to have a written closure plan for a hazardous waste storage pile in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel managed hazardous wastes at a coking tar sludge storage pile from at least November 21, 1989 until at least June 13, 2000. Ohio alleges that AK Steel failed to have a written closure plan from at least November 21, 1989 to at least May 6, 1991 demonstrating how the storage pile would be closed in a manner that controlled, minimized or eliminated the threat the storage pile presented to human health and/or the environment.

13. Ohio's Twenty-Second Claim for Relief – Alleged failure to have secondary containment on hazardous waste storage tanks in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel managed hazardous waste spent pickle liquor in a storage tank system from at least

November 21, 1989 to at least March 27, 1995. Ohio alleges that AK Steel failed to have adequate secondary containment for its storage tank system from at least November 21, 1989 to at least March 8, 1991, and failed to keep secondary containment for its storage tank system free of gaps and cracks from at least February 15, 1994 to at least March 27, 1995. Ohio alleges that these failures resulted in AK Steel causing, permitting or allowing spent pickle liquor to be released to the environment on or a date prior to November 2, 1990.

✓ 14. Ohio's Twenty-Third Claim for Relief – Alleged failure to prevent spills and overflows of hazardous waste from a hazardous waste storage tank system in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel failed to prevent the spill of spent pickle liquor from its storage tank systems on several dates from at least 1989 through at least 1997. Ohio alleges that AK Steel failed to use the appropriate controls and practices to prevent such spills.

✓ 15. Ohio's Twenty-Fourth Claim for Relief – Alleged failure to inspect hazardous waste storage tank system in violation of Ohio Revised Code Chapter 3734 and the regulations adopted thereunder. Ohio alleges that AK Steel failed to inspect its spent pickle liquor storage tank system at least once each operating day on several dates from at least January 1992 to at least April 1992.

ADD SUMMARY DESCRIPTIONS OF OTHER UNRELATED CLAIMS³

1. Proposed Deadline for Initial Disclosures

The Parties propose that initial disclosures, as required by Fed. R. Civ. P. 26(a)(1), be made no later than thirty (30) days after the Court's entry of a final scheduling order on Phase I

issues.⁴

2. Proposed Fact and Expert Discovery Deadlines

The Parties propose that disclosure of expert testimony, as provided in Fed. R. Civ. P. 26(a)(2)(A), (B) and (C), be made no later than five (5) months (150 days) after the Court's entry of a final scheduling order on Phase I, and that the fact discovery cut-off occur ~~seven (7)~~nine (9) months (270 days) after the Court's entry of a final scheduling order on ~~Phase I~~Phase II.

The Parties do not believe that discovery on these Claims should be conducted in phases that are limited to, or focused on, particular issues.

3. Changes to the Limitations on Discovery under the Federal Rules of Civil Procedure or under the Local Rules

It is the position of Plaintiff United States, Intervenor Plaintiff State of Ohio, and Intervenor Plaintiff applicant Sierra Club/Natural Resources Defense Council, that they are each entitled to 40 requests for admissions and 25 interrogatories as prescribed by Fed. R. Civ. P. 33, 34, and 36. The Parties anticipate that no changes to the limitations on discovery set forth in Fed. R. Civ. P. 30, 33, 34, and 36, regarding depositions, interrogatories, requests for production of documents, and requests for admissions are necessary, with the exception that the Parties stipulate that the 10 deposition limit set forth in Fed. R. Civ. P. 30 be increased to 50. While the Parties believe at this time that a total of 50 depositions will be sufficient for all Phases of this case, the Parties reserve their rights to seek additional modifications to the discovery rules permitted by the Fed. R. Civ. P., S.D. Ohio Local Rules, whether through leave of Court or the Parties' stipulations.

All Parties reserve their right to seek protective orders from this Court pursuant to Rule

26 of the Federal Rules of Civil Procedure should circumstances so warrant.

**B. PROPOSED DATE FOR FILING ALL DISPOSITIVE PRE-TRIAL
MOTIONS ON PHASE II ISSUES**

The Parties propose that the deadline for filing of dispositive motions pursuant to Fed. R. Civ. P. 56 be set for sixty (60) days after the fact discovery cut-off date.

**C. PROPOSED DATE FOR FILING A JOINT FINAL PRE-TRIAL ORDER
ON PHASE II**

The Parties propose that a Joint Final Pre-Trial Order be filed thirty (30) days before trial.

**D. THE DATE THE PARTIES BELIEVE THEY WILL BE READY FOR
TRIAL ON PHASE II**

The Parties believe that they will be ready for trial ninety (90) days following the date for filing of dispositive motions, pursuant to Fed. R. Civ. P. 56, as provided in item B, above.

A proposed Scheduling Order setting forth the above deadlines is attached.

III. THE UNITED STATES' CLAIMS FOR RELIEF FOUR, FIVE, AND SEVEN

**THE STATE OF OHIO'S CLAIMS NUMBER NINE, TEN, THIRTEEN,
FOURTEEN, SIXTEEN, SEVENTEEN AND TWENTY-FIVE**

THE SIERRA CLUB/NATURAL RESOURCES DEFENSE COUNCIL'S CLAIMS

This Phase addresses Claims that have a potential for overlap with Phase I issues. The Parties propose that these Claims be litigated after the Court's final ruling resolving all Phase I issues. **To the extent that litigation of Phase II is ongoing after the completion of Phase I, the Parties propose that Phase III be joined with Phase II and that the earlier of the respective deadlines apply.**

A. PROPOSED DISCOVERY DEADLINES AND PROCEDURE

The Parties propose that discovery on these Claims commence following the Court's final ruling resolving Phase I issues. The Parties agree that discovery may be needed on each of these Claims, including the following federal Claims set forth in the United States' First Amended Complaint:

NUP? 1. Fourth Claim for Relief – Alleged violation of NPDES Narrative Standards under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Exhibit B to the United States' First Amended Complaint, the United States alleges that AK Steel discharged pollutants in violation of one or more of the narrative standards set forth in its 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

NUP 2. Fifth Claim for Relief – Alleged violation of Clean Water Act prohibition on unpermitted discharges of PCBs – On diverse occasions, including, but not limited to the dates specified in the First Amended Complaint, AK Steel discharged pollutants, including but not limited to PCBs, into the waters of the United States from point sources at the facility without the authorization of an NPDES permit, in violation of the Clean Water Act.

*0 of 3008(h)
a 7003* 3. Seventh Claim for Relief – Alleged releases of hazardous waste or hazardous constituents at AK Steel's facility – The United States alleges that there have been releases of hazardous wastes and hazardous constituents into the environment from AK Steel's facility, and that as a result, AK Steel is required to perform corrective action at the facility to remedy releases of hazardous wastes and hazardous constituents, and to prevent future releases, in accordance with Section 3008(h) of RCRA, 42 U.S.C. § 6928(h).

In setting forth the above matters on which discovery may be needed, the United States does not intend to delimit or modify any of the Claims set forth in its First Amended

Complaint.

DUP 7 4. Ohio's Ninth Claim for Relief - Alleged violation of NPDES Narrative Standards under the Clean Water Act – On numerous occasions, including, but not limited to the dates specified in Attachment C to Ohio's First Amended Complaint, Ohio alleges that AK Steel discharged pollutants in violation of one or more of the narrative standards set forth in its 1992 and 1997 NPDES Permits, in violation of the Clean Water Act.

5. Ohio's Tenth Claim for Relief – Alleged violation of Clean Water Act prohibition on unpermitted discharges of PCBs – On diverse occasions, including, but not limited to the dates specified in the First Amended Complaint, AK Steel discharged pollutants, including but not limited to PCBs, into the waters of the United States from point sources at the facility without the authorization of an NPDES permit, in violation of the Clean Water Act.

6. Ohio's Thirteenth Claim for Relief – This claim is a duplicate of Ohio's Ninth Claim for Relief with the exception that it is being brought under Ohio Revised Code Chapter 6111 rather than under the Clean Water Act.

7. Ohio's Fourteenth Claim for Relief – This claim is a duplicate of Ohio's Tenth Claim for Relief with the exception that it is being brought under Ohio Revised Code Chapter 6111 rather than under the Clean Water Act.

8. Ohio's Sixteenth Claim for Relief – Alleged violation of Ohio's water quality standards brought under Ohio Revised Code Chapter 6111 and the regulations adopted thereunder. Ohio alleges that AK Steel has discharged pollutants, including but not limited to PCBs, into waters of the State. Ohio alleges that these illegal discharges have

occurred as described in Attachment C to the First Amended Complaint.

9. Ohio's Seventeenth Claim for Relief – Alleged violation of the Permit to Install requirements of Ohio Revised Code Chapter 6111 and the regulations adopted thereunder. Ohio alleges that AK Steel installed a trenching system with other treatment devices without first obtaining a Permit to Install. Ohio alleges that this illegal conduct occurred from at least December 1997 and to at least the present.

10. Ohio's Twenty-Fifth Claim for Relief – Alleged violation of Ohio's general nuisance statute, Ohio Revised Code Chapter 3767. Ohio alleges that AK Steel has corrupted and/or rendered unwholesome and/or impure Dick's Creek, the Great Miami river, and unnamed tributaries of Dick's Creek and the Great Miami River to the prejudice and injury of others and/or the public. Ohio alleges that this illegal conduct has occurred from at least 1995 to the present.

ADD SUMMARY DESCRIPTIONS OF OTHER RELATED CLAIMS

1. Proposed Deadline for Initial Disclosures

The Parties propose that initial disclosures, as required by Fed. R. Civ. P. 26(a)(1), be made no later than thirty (30) days after the Court's final ruling resolving all Phase I issues.⁵

2. Proposed Fact and Expert Discovery Deadlines

The Parties propose that disclosure of expert testimony, as provided in Fed. R. Civ. P. 26(a)(2)(A), (B) and (C), be made no later than six (6) months (180 days) after the Court's final ruling resolving all Claim Eight issues, and that the fact discovery cut-off

occur nine (9) months (270 days) after the Court's final ruling resolving all Phase I issues.

The Parties do not believe that discovery on these Claims should be conducted in phases that are limited to, or focused on, particular issues.

3. **Changes to the Limitations on Discovery under the Federal Rules of Civil Procedure or under the Local Rules**

It is the position of Plaintiff United States, Intervenor Plaintiff State of Ohio, and Intervenor Plaintiff applicant Sierra Club/Natural Resources Defense Council, that they are each entitled to 40 requests for admissions and 25 interrogatories as prescribed by Fed. R. Civ. P. 33, 34, and 36. The Parties anticipate that no changes to the limitations on discovery set forth in Fed. R. Civ. P. 30, 33, 34, and 36, regarding depositions, interrogatories, requests for production of documents, and requests for admissions are necessary, with the exception that the Parties stipulate that the 10 deposition limit set forth in Fed. R. Civ. P. 30 be increased to 50. While the Parties believe at this time that a total of 50 depositions will be sufficient for all Phases of this case, the Parties reserve their rights to seek additional modifications to the discovery rules permitted by the Fed. R. Civ. P., S.D. Ohio Local Rules, whether through leave of Court or the Parties' stipulations.

All Parties reserve their right to seek protective orders from this Court pursuant to Rule 26 of the Federal Rules of Civil Procedure should circumstances so warrant.

B. **PROPOSED DATE FOR FILING ALL DISPOSITIVE PRE-TRIAL MOTIONS ON PHASE III ISSUES**

The Parties propose that the deadline for filing of dispositive motions pursuant to Fed. R. Civ. P. 56 be set for sixty (60) days after the fact discovery cut-off date.

C. **PROPOSED DATE FOR FILING A JOINT FINAL PRE-TRIAL ORDER ON PHASE III**

The Parties propose that a Joint Final Pre-Trial Order be filed thirty (30) days before trial.

D. THE DATE THE PARTIES BELIEVE THEY WILL BE READY FOR TRIAL ON PHASE III

The Parties believe that they will be ready for trial ninety (90) days following the date for filing of dispositive motions, pursuant to Fed. R. Civ. P. 56, as provided in item B, above.

IV. OHIO'S CLAIMS FOR RELIEF ONE, FOUR AND SEVEN

Ohio does not believe these Claims should be stayed and reserves its right to argue that the stay should be lifted. At this time, however, Ohio proposes that these claims be stayed pending further Order of the Court. If at any time the Court issues an Order lifting the stay of these claims, Ohio proposes that these claims be litigated in accordance with the Phase II or III schedule, whichever is sooner.

A proposed Scheduling Order setting forth the above deadlines is attached.

Respectfully submitted,
JOHN C. CRUDEN
Acting Assistant Attorney General
Environment and Natural Resources Division

ROBERT W. DARNELL
FRANCIS J. BIROS
Trial Attorneys
Environment and Natural Resources Division
United States Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044

(202) 514-4162

SALVADOR DOMINGUEZ
United States Attorney
Southern District of Ohio

GERALD F. KAMINSKI (Bar No. 0012532)
Assistant United States Attorney
Room 220
Potter Stewart Federal Courthouse
5th and Walnut Streets
Cincinnati, Ohio 45202
(513) 684-3711

OF COUNSEL:
ROBERT S. GUENTHER
ORELIA MERCHANT
United States Environmental Protection
Agency, Region 5
77 West Jackson Boulevard (C-14J)
Chicago, Illinois 60604-3590

BETTY D. MONTGOMERY
OHIO ATTORNEY GENERAL

DAVID G. COX (Ohio 0042724)
Trial Attorney
LORI A. MASSEY (Ohio 0047226)
DOUGLAS A. CURRAN (Ohio 0065750)
DAVID G. KERN (Ohio 0072421)
Assistant Ohio Attorneys General
Environmental Enforcement Section
30 E. Broad Street, 25th Floor
Columbus, OH 43215-3428
(614) 466-2766
Counsel for the State of Ohio

SIERRA/NRDC CLUB SIGNATURE LINE

PAUL W. CASPER, JR. (Ohio 0010412)

Trial Attorney

STEPHEN N. HAUGHEY (Ohio 0010459)

FROST BROWN TODD LLC

201 E. Fifth Street, Suite 2200

Cincinnati, OH 45202

(513) 651-6800

Counsel for AK Steel Corporation

F:\EES\OAGCASES\A-D\AK Steel (federal enf)\pleadings federal\Draft pleadings\dranell's case mgmt plan for pcbs 12 7 01

¹ As discussed infra, however, the Parties stipulate that additional depositions will be necessary for purposes of the remaining Claims in this matter.

² On May 31, 2001, the United States, the State of Ohio, and AK Steel submitted a Joint Proposed Plan for the Conduct of Litigation and Proposed Scheduling Order regarding the United States' Claims for Relief One, Two, Three, Four, and Six. The instant Joint Proposed Plan is intended to supercede the Parties' previous submission.

~~³ Pursuant to the Court's Order of November 28, 2001, the State of Ohio's Claims for Relief One, Four, and Seven are stayed pending further Order of the Court.—~~

⁴ The United States, the State of Ohio, and AK Steel have already complied with the initial disclosure requirements with respect to the United States' Claims for Relief One, Two, Three, Four, and Six.

⁵ The United States, the State of Ohio, and AK Steel have already complied with the initial disclosure requirements with respect to the United States' Claims for Relief One, Two, Three, Four, and Six.



"Biros, Frank"
<FBiros@ENRD.USDO
J.GOV>

12/12/2001 03:10 PM

To: Michael Mikulka/R5/USEPA/US@EPA, GARY
CYGAN/R5/USEPA/US@EPA, Robert Guenther/R5/USEPA/US@EPA
cc: "Darnell, Robert" <RDarnell@ENRD.USDOJ.GOV>
Subject: RE: Ohio's Comments on the Case Management Plan

Robert, Mike and Gary:

Please review the attached document which includes Gary Cox's comments on the draft case management plan for AK Steel. Specifically, review the Ohio's claims in phase II to determine whether there is no overlap of potential relief with the phase I 7003 claim. Only the claims in phase III should have a potential for overlap since we've separated the litigation on these claims from phase I. Please provide your review comments by noon eastern time tomorrow, Thursday. Thanks. Frank.



#521254.WP



"Morton, Eric"
<Eric.Morton@ttemi.com>

To: Michael Mikulka/R5/USEPA/US@EPA
cc:
Subject: Lisa Geist's Memorandum

12/06/2001 03:37 PM

Mike,

Would you please fax over a copy of Lisa Geist's memorandum to Robert Guenther regarding risk assessment calculations associated with fish ingestion? The memorandum is dated April 27, 2000.

Thanks,

Eric

Eric S. Morton
Tetra Tech EM Inc.
200 E. Randolph Drive, Suite 4700
Chicago, IL 60601
(312) 856-8797 (phone)
(312) 938-0118 (fax)
mortone@ttemi.com

ERIC - SEE ATTACHED.

MIKE 12/10

Variables:

| | |
|--------------|---|
| CF | contaminant concentration in fish (e.g. maximum concentration in fish tissue) |
| BW | adult body weight |
| AT | averaging time |
| IR | ingestion rate |
| FI | fraction of fish ingested from contaminated area |
| AB | absorption |
| EF | exposure frequency |
| ED | exposure duration |
| slope factor | cancer slope factor for PCBs |
| RfD | reference dose for PCB-1254 |

References/Sources:

| | |
|-------------|--------------------------|
| CF | OEPA 1998 |
| BW | U.S. EPA 1989 |
| AT | 70 years x 365 days/year |
| IR | U.S. EPA 1991 |
| FI | professional judgement |
| AB | U.S. EPA 1989 |
| EF | U.S. EPA 1991 |
| ED | U.S. EPA 1989 |
| slope fctr. | U.S. EPA IRIS database |
| RfD | U.S. EPA IRIS database |

Equations:

$$\text{Cancer Risk} = \frac{(\text{CF} \times \text{IR} \times \text{FI} \times \text{AB} \times \text{EF} \times \text{ED})}{(\text{BW} \times \text{AT})} \times \text{slope factor}$$

$$\text{Noncancer Risk} = \frac{(\text{CF} \times \text{IR} \times \text{FI} \times \text{AB} \times \text{EF} \times \text{ED})}{(\text{BW} \times \text{AT})} \times \text{RfD}$$

REG. 5

ID:3123534342

DEC 10'01 10:12

TRANSMIT CONFIRMATION REPORT

| | | |
|-------------|---|-----------------|
| NO. | : | 001 |
| RECEIVER | : | PRC-EMI-CHICAGO |
| TRANSMITTER | : | REG. 5 |
| DATE | : | DEC 10'01 10:12 |
| DURATION | : | 01'31 |
| MODE | : | STD |
| PAGES | : | 03 |
| RESULT | : | OK |

Revised draft 12/6/01, includes verbal comments from OEPA

December 6, 2001

DE-9J

VIA FACSIMILE AND
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl Batliner, P.E.
Environmental Affairs Manager
AK Steel - Middletown Works
1801 Crawford Avenue
Middletown, OH 45043

Re: Deviations from Soil and Groundwater Investigation Plan Approved Under
Administrative Order Pursuant to Section 7003(a) of the Resource Conservation and
Recovery Act, 42 U.S.C. § 6973(a)
AK Steel, Middletown Works, 1801 Crawford Avenue, Middletown, OH
USEPA ID Number OHD 004 234 480

Dear Mr. Batliner:

We have reviewed activities taken by your contractor, Arcadis Geraghty and Miller, purportedly pursuant to the Soil and Groundwater Investigation Plan approved with modifications by U.S. EPA on July 2, 2001, pursuant to procedures specified in paragraphs 162 through 164 of the Order. The specific actions we are concerned about are the stream gages and well screens installed to characterize ground water/surface water interactions in Dick's Creek. It is our understanding that the equipment installed has **either** been washed away **or irreparably damaged** and no data is currently being collected.

Please be advised that the approved Plan was required to contain "sufficient tasks to characterize groundwater/surface interactions...in Dick's Creek...", based on Comment 6, Section 3.4 of the Approval with Modifications for the Soil and Groundwater Investigation Plan, dated July 2, 2001 (see excerpt below).

Excerpt from U.S. EPA's Approval with Modifications of SGWIP:

6. Section 3.4, Conceptual Groundwater Flow Model; pages 29 through 32

This section of the plan requires additional field work to characterize the groundwater/surfacewater interface in Dick's Creek as required by **paragraph 149** of the Order. Specifically ground-water flow from the site to the north, whether from the perched or upper the aquifer requires characterization. **The plan must be modified to**

include the determination of vertical hydraulic gradients (a minimum of 4 measurements) in and along Dick's Creek from a point near the crossing of Dick's Creek with the OMS road to a down river point near the railroad bridge west of the entry of Monroe Ditch to Dick's Creek. One of these measurements points shall be near outfall 002.

We interpret this to mean that data must be collected to meet this objective. In light of the circumstances, well point installations (short well screens) with manual readings installed **as soon as possible** within the next 20 days will partially fulfill the immediate purpose of replacing the previously destroyed stream gage/well screen assemblies. However, the Order requires ground water/surface water data be gathered over a longer period to accurately describe this interface. Therefore, more robust stream gage/wellpoint equipment must be designed and installed within the next 60 days that will withstand the seasonal conditions found in Dicks Creek. **(At this point, we are unclear that the well points previously installed were installed consistent with plans dated August 30, 2001, previously faxed to me by Dave Vicarel, Arcadis, on August 31, 2001; please confirm whether or not they were installed consistent with this plan.)** We also note that the use of 3 foot screens is not acceptable, and future equipment must be specified with no more than a 6 inch screen.

We remind you that under the Order, we have the right to impose final modifications and to commence any portion of the work ourselves and, under paragraph 180, to seek reimbursement of the costs incurred in doing that work from your company. Additionally, failure to meet the requirements of the plan, including the modifications we are requiring to implement, may subject your company to fines of up to \$5,500 per day of violations, pursuant to section 7003(b) of RCRA, 42 U.S.C. § 6973(b).

If you have any questions regarding the above, please contact me at (312) 886-5902.

Sincerely yours,

Gary Cygan
Project Manager

cc: Harold O'Connell
Ohio Environmental Protection Agency

Bob Karl, Attorney
Ohio Attorney General's Office

Nita Nordstrom, DERR
Ohio EPA, SWDO

bcc: Robert Guenther, Associate Regional Counsel, C-14J
Gary Cygan, Project Manager, DE-9J

Robert Darnell, Trial Attorney
U.S. Department of Justice

ENFORCEMENT AND COMPLIANCE ASSURANCE BRANCH

| SECRETARY | SECRETARY | SECRETARY |
|-------------------|-----------------------------|-------------------|
| | | |
| AUTHOR/ TYPIST | CA SECTION SECTION CHIEF | ECAB BRANCH CHIEF |
| | | |

RELEASED

DATE 11/27/18

RIN # 2018-00461

INITIALS JW

CONFIDENTIAL

Michael Mikulka

12/06/2001 11:13 AM

To: Nita Nordstrom <nita.nordstrom@epa.state.oh.us>,
Harold.OConnell@epa.state.oh.us, John.McGinnis@epa.state.oh.us
cc: GARY CYGAN/R5/USEPA/US@EPA, Jeff.Hines@epa.state.oh.us,
Robert Guenther/R5/USEPA/US@EPA, RDarnell@enrd.usdoj.gov
Subject: Re: Draft Additonal work letter 

Here is a draft of an additional work letter regarding the flood plain and the area at the mouth of Monroe Ditch for your input. We debated the merits of more vs. less detail and came up with less as the preferred option. We have not yet generated exhibit 1.

Mike



NewWork.dft.w

DRAFT

AK5 038649

CONFIDENTIAL

RELEASED
DATE _____
RIN 4
INITIALS _____

RELEASED

DATE _____

RIN # _____

INITIALS _____

CONFIDENTIAL

REVISED DRAFT 12/6/01

DRAFT

VIA FACSIMILE AND
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

DE-9J

Richard Wardrup, President
AK Steel Corporation
703 Curtis Street
Middletown, OH 45043

Re: Additional Work Pursuant to 7003(a) Administrative Order
AK Steel, Middletown Works, 1801 Crawford Avenue, Middletown, OH
USEPA ID Number OHD 004 234 480

Dear Mr. Wardrup:

U.S. EPA has determined that additional work is necessary under the terms of the subject Administrative Order in order to fully characterize the extent of contamination and all potential human and ecological risk pathways. U.S. EPA's December 1, 2000, approval with modifications of the Sampling and Analysis Plan, stated that "... additional sampling of surficial sediments or characterization of the lateral extent of contamination, including the stream banks, may be necessary in the future." U.S. EPA has determined that additional work is necessary in 2 areas as identified below.

The discovery of an additional source of contamination within the stream bank area of Dick's Creek during trenching activity by AK Steel's contractor indicates that additional sources of contamination may be present within the flood plain area of Dick's Creek both adjacent to the AK Steel property and further downstream, which warrant additional investigation. The areas of the flood plain to be investigated as to potential sources of contaminants and their impact on human health and the environment are identified on Exhibit 1 to this letter.

The results of the sampling work conducted under the Order in Monroe Ditch and Dick's Creek identify a potential hot spot of contamination at the mouth of Monroe Ditch which must be further investigated. Specifically, both the vertical and lateral extent of contamination associated with sample MDSD01 need to be further defined.

This additional work is required pursuant to the provisions of Paragraph 178 of the subject Order. In order to comply you must develop and submit an addendum to the Sampling and Analysis Plan Revision 2, dated December 14, 2000, within 14 days of your receipt of this letter. To the extent that this work requires any changes to other, previously submitted documents, addenda to

AK5 038650

CONFIDENTIAL

2

those documents must also be submitted within 14 days of your receipt of this letter. U.S. EPA is also requiring that a photograph of each core sample taken and analyzed as part of this additional work also be submitted.

If you have any questions regarding the above, please contact Gary Cygan of our staff, who is the AK Steel project manager for purposes of this Order. He may be contacted at 312-886-5902.

Sincerely yours,

Joseph M. Boyle, Chief
Enforcement and Compliance Assurance Branch

Enclosure

cc: Harold O'Connell
Division of Hazardous Waste Management
Ohio Environmental Protection Agency

Diana Zimmerman
Division of Surface Water
Ohio Environmental Protection Agency

Bob Karl, Attorney
Ohio Attorney General's Office

Carl Batliner
AK Steel - Middletown Works
1801 Crawford Avenue
Middletown, Ohio 45043

Paul W. Casper, Jr., Esquire
Frost & Jacobs, LLP.
2500 PNC Center
201 East Fifth Street
Cincinnati, Ohio 45202-4182

AK5 038651

bcc: Robert Guenther, Associate Regional Counsel, C-14J
Gary Cygan, Project Manager, DE-9J
Michael Mikulka, DE-9J
Thomas Bramscher, WC-15J

Robert Darnell, Trial Attorney
U.S. Department of Justice

ENFORCEMENT AND COMPLIANCE ASSURANCE BRANCH

| SECRETARY | SECRETARY | SECRETARY |
|---------------|-----------------------------|-------------------|
| | | |
| Mikulka/Cygan | CA SECTION SECTION CHIEF | ECAB BRANCH CHIEF |
| | | |

AK5 038652

REVISED DRAFT 12/5/01

DoJ County
(Bicos)

VIA FACSIMILE AND
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

DE-9J

Richard Wardrup, President
AK Steel Corporation
703 Curtis Street
Middletown, OH 45043

Re: Additional Work Pursuant to 7003(a) Administrative Order
AK Steel, Middletown Works, 1801 Crawford Avenue, Middletown, OH
USEPA ID Number OHD 004 234 480

Dear Mr. Wardrup:

U.S. EPA has determined that additional work is necessary under the terms of the subject Administrative Order in order to fully characterize the extent of contamination and all potential human and ecological risk pathways. ~~In~~ U.S. EPA's December 1, 2000, approval with modifications of the Sampling and Analysis Plan, ~~it was identified~~ stated that "... additional sampling of surficial sediments or characterization of the lateral extent of contamination, including the stream banks, may be necessary in the future." U.S. EPA has determined that additional work is necessary in 2 areas as identified below.

The discovery of an additional source of contamination within the stream bank area of Dick's Creek during trenching activity by AK Steel's contractor ~~identified~~ indicates that additional sources of contamination may be present within the flood plain area of Dick's Creek both adjacent to the AK Steel property and further downstream, which warrant additional investigation. The areas of the flood plain to be investigated as to potential sources of contaminants and their impact on human health and the environment are identified on Exhibit 1 to this letter.

The results of the sampling work conducted under the Order in Monroe Ditch and Dick's Creek identify a potential hot spot of contamination at the mouth of Monroe Ditch which must be further ~~delineated~~ investigated. Specifically, both the vertical and lateral extent of contamination associated with sample MDSD01 need to be further ~~delineated~~ defined.

This additional work is required pursuant to the provisions of Paragraph 178 of the subject Order. In order to comply you must develop and submit an addendum to the Sampling and Analysis Plan Revision 2, dated December 14, 2000, within 14 days of your receipt of this letter.

To the extent that this work requires any changes to other, previously submitted documents, addenda to those documents must also be submitted within 14 days of your receipt of this letter. U.S. EPA is also requiring that a photograph of each core sample taken and analyzed as part of this additional work ~~is also required~~ also be submitted.

If you have any questions regarding the above, please contact Gary Cygan of our staff, who is the AK Steel project manager for purposes of this Order. He may be contacted at 312-886-5902.

Sincerely yours,

Joseph M. Boyle, Chief
Enforcement and Compliance Assurance Branch

Enclosure

cc: Harold O'Connell
Division of Hazardous Waste Management
Ohio Environmental Protection Agency

Diana Zimmerman
Division of Surface Water
Ohio Environmental Protection Agency

Bob Karl, Attorney
Ohio Attorney General's Office

Carl Batliner
AK Steel - Middletown Works
1801 Crawford Avenue
Middletown, Ohio 45043

Paul W. Casper, Jr., Esquire
Frost & Jacobs, LLP.
2500 PNC Center
201 East Fifth Street
Cincinnati, Ohio 45202-4182

bcc: Robert Guenther, Associate Regional Counsel, C-14J
Gary Cygan, Project Manager, DE-9J
Michael Mikulka, DE-9J
Thomas Bramscher, WC-15J

Robert Darnell, Trial Attorney
U.S. Department of Justice

ENFORCEMENT AND COMPLIANCE ASSURANCE BRANCH

| SECRETARY | SECRETARY | SECRETARY |
|---------------|-----------------------------|-------------------|
| Mikulka/Cygan | CA SECTION SECTION CHIEF | ECAB BRANCH CHIEF |
| | | |



Tetra Tech EM Inc.

200 E. Randolph Drive, Suite 4700 ♦ Chicago, IL 60601 ♦ (312) 856-8700 ♦ FAX (312) 938-0118

Date: November 7, 2001
To: Allen Wojtas, U.S. Environmental Protection Agency (EPA) EPA Region 5
From: Mary Wojciechowski, Tetra Tech EM Inc. (Tetra Tech) *mw*
Subject: Request for additional funding for the AK Steel Corporation (AK Steel)
Technical Direction Memorandum (TDM) dated June 5, 2000
(Revised November 21, 2000 and March 21, 2001)
EPA Contract No. 68-W9-9018, Work Assignment (WA) No. R05805

At the close of the October 2001 report period, about 1,485.5 level-of-effort (LOE) hours and \$150,228 were expended under the above-referenced TDM. This expenditure constitutes about 68 percent of the approved LOE hours and 113 percent of the approved dollars for the above-referenced TDM dated June 5, 2000 (amended November 21, 2000 and March 21, 2001). As of October 28, 2001, Tetra Tech had completed the following work under the TDM:

- Reviewed background information, conducted two site visits, and prepared and submitted a draft human health risk assessment
- A subcontractor to Tetra Tech (AquaQual Services, Inc. [AquaQual]) prepared an ecological risk assessment which Tetra Tech reviewed before it was submitted to the U.S. Environmental Protection Agency (EPA)
- Prepared and submitted technical review comments on the following documents:
 - "Sampling & Analysis Plan [SAP], AK Steel Property, Dick's Creek System, Middletown, Ohio" and "Quality Assurance Project Plan [QAPP], Olympic Mills Service Operations Area, AK Steel Property, Middletown Works, Revision 0;" both documents are dated September 29, 2000.
 - "Hydrogeologic Investigation Plan, Revision 1" dated December 14, 2000.
 - "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" dated January 16, 2001.
 - "Soil and Groundwater Investigation Plan (SGIP)" dated March 2001.
 - "Motion for an Injunction Under the All Writs Act (Expedited Ruling Requested)" and Exhibits 1, 2, 3, and 4, dated June 15, 2001 (Tetra Tech reviewed the motion and Exhibits 1, 2, and 3; AquaQual reviewed the motion and Exhibit 4)
 - "Addendum 3 to the Human Health Risk Assessment: The Effect of Fish Data on Estimates of Risk for Fish Consumption, Dick's Creek, Middletown, OH" dated September 7, 2001 and AK Steel's "Notice of Supplementary Authority in

RELEASED
DATE 8/13/2018
RIN # 208-004691
INITIALS *fw*

AK5 043602

100-443887-100

Support of its Motion for Injunction Under the All Writs Act" dated September 25, 2001.

- Prepared a list of the most significant concerns regarding the human health and ecological risk assessment portions of the risk assessment work plan, Revision 1.
- AquaQual prepared responses to comments, dated July 5, 2001, from AK Steel's contractor ARCADIS Geraghty & Miller (ARCADIS) on the ecological risk assessment spreadsheet prepared by AquaQual and related supporting documentation.
- Attended meetings on March 28 and April 5, 2001 with representatives of EPA, Ohio EPA, and Tetra Tech to discuss consolidating EPA's and Ohio EPA's comments on the human health and ecological portions of the risk assessment work plan, Revision 1, respectively.

Tetra Tech will need additional LOE hours and dollars to address the costs incurred to date and to conduct further work under the TDM. The additional funding is necessary because of several complicating factors that increased the expenditures above the approved technical direction memorandum (TDM) cost estimate. The most significant of these complicating factors was the filing by AK Steel of a motion to dismiss EPA's Resource Conservation and Recovery Act (RCRA) Section 7003 order. The complicating factors were discussed with the EPA during the October reporting period and are summarized below.

- AK Steel filed a motion to dismiss EPA's RCRA Section 7003 order - this action precipitated a variety of actions including (1) generation of documents (including the original motion to dismiss and associated exhibits and an addendum to the human health risk assessment) that required extensive and detailed review in order to support EPA's case and (2) generation of extensive comments on the ecological risk assessment spreadsheet prepared by AquaQual and related supporting documentation that required detailed and careful responses.
- After discussion between AK Steel, EPA, and Ohio EPA, AK Steel's contractor produced a SGIP that required review and comment. In addition to reviewing the SGIP, Tetra Tech conducted a site visit in order to increase understanding of site-specific conditions.
- The enforcement nature of this work assignment necessitated several meetings between EPA, Ohio EPA, and Tetra Tech for the purpose of organizing a consolidated set of comments regarding the risk assessment work plan and the human health and ecological risk assessments prepared by AK Steel's contractor ARCADIS.

Tetra Tech estimates that 240 LOE hours and \$19,951 will be needed to assist EPA in preparing consolidated comments on the human health and ecological risk assessments prepared by ARCADIS and to provide additional technical support to EPA in support of its enforcement case, in particular in response

November 7, 2001
Allen Wojtas, EPA Region 5
Page 3

to further actions or documents prepared by AK Steel in support of its motion to dismiss EPA's order. The total TDM cost is estimated at 1,725.5 LOE hours and \$170,179. This request for additional funding for the TDM will not alter the total LOE hours and dollars budgeted for the WA. Tetra Tech expects to complete all work within the approved WA budget.

Without additional LOE hours and dollars for the TDM, Tetra Tech estimates that it will have to stop work on the TDM immediately. Please call me at (312) 856-8786 if you have any questions or need additional information regarding the WA.

cc: ✓ Bernie Orenstein, Regional Project Officer, EPA Region 5
✓ Gary Cygan, EPA Technical Contact/Project Manager
Michael Mikulka, EPA Technical Advisor
Ed Schuessler, Tetra Tech Regional Manager
Doris Bean, Tetra Tech Financial Manager
Arthur Glazer, Tetra Tech Program Manager
Eric Morton, Tetra Tech Site Manager

AK5 043604

**Tetra Tech EM Inc.
Tasks Summary**

| Task Number | Task 1 | Task 2 | Task 3 | Task 4 | Task 5 | Task 6 | Task 7 | Task 8 | Task 9 | Task 10 | Task 11 | Task 12 | |
|---|--------|---------|--------|----------|--------|--------|--------|--------|--------|---------|---------|---------|----------|
| Task Name | | | | | | | | | | | | | TOTAL |
| Tetra Tech Labor Estimate | | | | | | | | | | | | | |
| P4 | 0 | 0 | 0 | 156 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 156 |
| P3 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 |
| P2 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| P1 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| T2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clerical | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Team Sub Labor Estimate | | | | | | | | | | | | | |
| Professional Hours | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clerical Hours | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Tetra Tech Professional Labor Cost | \$0 | \$0 | \$0 | \$7,387 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$7,387 |
| Total Tetra Tech Clerical Labor Cost | \$0 | \$0 | \$0 | \$204 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$204 |
| Total Tetra Tech Labor Cost | \$0 | \$0 | \$0 | \$7,591 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$7,591 |
| Total Tetra Tech Travel Cost | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total Tetra Tech ODCs | \$0 | \$10 | \$0 | \$550 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$560 |
| Team Sub Costs | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Non-Team Sub Cost | \$0 | \$1,950 | \$0 | \$1,300 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$3,250 |
| Indirect Costs | \$0 | \$143 | \$0 | \$7,262 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$7,405 |
| Subtotal Cost | \$0 | \$2,103 | \$0 | \$16,703 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$18,806 |
| Fixed Fee | \$0 | \$0 | \$0 | \$1,145 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$1,145 |
| TOTAL COST | \$0 | \$2,103 | \$0 | \$17,848 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$19,951 |

Notes:

- 1 See attached sheets for detail on cost breakdown
- 2 Indirect costs include fringe benefit, overhead, and general administrative costs.

AK5 043605



Tetra Tech EM Inc.

200 E. Randolph Drive, Suite 4700 ♦ Chicago, IL 60601 ♦ (312) 856-8700 ♦ FAX (312) 938-0118

*Produce
X-76*

September 28, 2001

Mr. Allen Wojtas
Work Assignment Manager
Enforcement and Compliance Assurance Branch
Waste, Pesticides and Toxics Division (DE-9J)
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Field Oversight Summary for Monitoring Point
Installation Activities on August 22 and 23, 2001
AK Steel Facility, Middletown, Ohio
EPA Contract No. 68-W9-9018, Work Assignment No. R0580615**

Dear Mr. Wojtas:

Tetra Tech EM Inc. (Tetra Tech) is enclosing a summary of its field oversight observations during installation of monitoring points (well points and stream gauges) along Dick's Creek and Monroe Ditch in the vicinity of the AK Steel facility in Middletown, Ohio. The installation activities were conducted by ARCADIS Geraghty & Miller on behalf of AK Steel and took place on August 22 and 23, 2001.

Please contact me at (312) 856-8791 or Eric Morton at (312) 856-8797 if you have any questions about the field oversight summary.

Sincerely,

Eric Morton

for Kelly Hirsch
Project Manager

Enclosure

cc: Bernie Orenstein, EPA Regional Project Officer (letter only)
Gary Cygan, EPA Technical Contact and Project Manager
✓ Michael Mikulka, EPA Technical Advisor
Ed Schuessler, Tetra Tech Regional Manager (letter only)
Eric Morton, Tetra Tech Site Manager
Art Glazer, Tetra Tech Program Manager

AK5 042587

**FIELD OVERSIGHT SUMMARY
FOR MONITORING POINT INSTALLATION ACTIVITIES
ON AUGUST 22 AND 23, 2001
AK STEEL FACILITY, MIDDLETOWN, OHIO**

Prepared for

**U.S. Environmental Protection Agency
Waste, Pesticides and Toxics Division
Chicago, Illinois**

| | | |
|-----------------------------|---|---------------------------------------|
| EPA Region | : | 5 |
| Contract No. | : | 68-W9-9018 |
| Work Assignment No. | : | R0580615 |
| Date Prepared | : | September 28, 2001 |
| EPA Work Assignment Manager | : | Allen Wojtas |
| Telephone No. | : | (312) 886-6194 |
| Prepared by | : | Tetra Tech EM Inc. (Gary Musgrave) |
| Tetra Tech Project Manager | : | Kelly Hirsch |
| Telephone No. | : | (312) 856-8791 |

AK5 042588

**FIELD OVERSIGHT SUMMARY
FOR MONITORING POINT INSTALLATION ACTIVITIES
AK STEEL FACILITY, MIDDLETOWN, OHIO**

Tetra Tech EM Inc. Oversight Personnel:
Reporting Period:

Gary Musgrave
August 22 and 23, 2001

1.0 INTRODUCTION

As requested by the U.S. Environmental Protection Agency (EPA) work assignment manager, Allen Wojtas, Tetra Tech EM Inc. (Tetra Tech) conducted field oversight of well point and stream gauge installation activities in the vicinity of the AK Steel facility in Middletown, Ohio. ARCADIS Geraghty & Miller (ARCADIS) conducted the activities along Dick's Creek and Monroe Ditch on behalf of AK Steel on August 22 and 23, 2001. According to the "Soil and Groundwater Investigation Plan" (SGIP) dated July 20, 2001, (1) two well points were to be installed at each of three locations along Dick's Creek, one in the creek bed and the other in the creek bank, and (2) stream gauges were to be fastened to culvert pipes at two locations in Monroe Ditch within the Olympic Mills Services (OMS) facility.

Tetra Tech's daily oversight observations are summarized in Section 2.0. Photographs taken during field oversight activities are provided in Appendix A. A figure identifying the locations designated for well point and stream gauge installation is provided in Appendix B, and a copy of Tetra Tech's field logbook notes is provided in Appendix C.

2.0 DAILY OVERSIGHT OBSERVATIONS

Tetra Tech oversight observations on August 22 and 23, 2001, are summarized below.

August 22, 2001

Tetra Tech arrived at the site at 7:50 a.m. In addition to Gary Musgrave of Tetra Tech, Juanita Nordstrom and John McGuinness of the Ohio Environmental Protection Agency (OEPA) were present on site in an oversight capacity; Ms. Nordstrom is OEPA's site manager. ARCADIS and its subcontractor,

AK5 042589

Superior Environmental Services (SES), began to install a well point along Dick's Creek about 800 feet west of Monroe Ditch (near the Orman Welding facility) (see Appendix B).

According to the SGIP, well points were to be driven into the creek bed with either a sledge hammer or slide hammer. However, at 11:35 a.m., SES, as instructed by ARCADIS, began excavating a trench perpendicular to the south bank of the creek using a trackhoe (see Photograph No. 1 in Appendix A). The trench was about 2 feet wide and 15 feet long. ARCADIS told Tetra Tech that the trench was necessary to deploy a well point in the creek bank at the required depth in an area above the visible flood plain. ARCADIS also told Tetra Tech that a well point could not be driven through the hard substrate of the creek bed. According to Kevin Patton of ARCADIS, documentation was available to show EPA approval of the revised well point installation procedures. (Tetra Tech subsequently contacted Gary Cygan, the EPA technical contact and project manager, who stated that installation of well points using a trackhoe had not been approved by EPA.)

As creek water circulated through the excavated trench, Tetra Tech noted a petroleum odor and observed a sheen being released from the trench into Dick's Creek. SES placed boom material at the mouth of the trench to prevent further release of the sheen into Dick's Creek (see Photograph No. 2 in Appendix A). OEPA contacted Gary Cygan of EPA to update him on the activities taking place. At 1:30 p.m., Mr. Cygan directed ARCADIS field associates to take the actions listed below. (According to Kevin Patton of ARCADIS, Mr. Cygan specified the required actions to Dave Vicarel of ARCADIS; Mr. Vicarel subsequently contacted Mr. Patton, who directed the field personnel.)

- Stop excavating
- Prevent personnel from contacting water in the creek or trench
- Place excavated soil on plastic sheeting
- Order a roll-off box to contain the excavated soil for off-site disposal
- Place boom material in the creek to prevent further migration of the material causing the sheen
- Sample water where the sheen is present
- Sample the excavated soil

- Discontinue installation of piezometers (well points)

Ms. Juanita Nordstrom of OEPA collected grab samples of excavated soil lying on plastic sheeting for both OEPA and ARCADIS before the soil was placed in a lined roll-off box (see Photograph No. 3 in Appendix A). The OEPA and ARCADIS samples were not split samples, as they were collected from adjacent locations about 3 hours after soil was first placed on the plastic sheeting. Soil samples were collected in wide-mouth jars of about 12- to 16-ounce capacity. Ms. Nordstrom also collected trench water samples in 500-milliliter, amber bottles for both OEPA and ARCADIS. The analytical parameters for the soil and water samples were not specified by OEPA or ARCADIS at the time of sample collection. (According to Gary Cygan of EPA, OEPA's samples were sent to a laboratory for analysis; Tetra Tech has no confirmation that ARCADIS sent its samples to a laboratory for analysis.)

After soil and water samples had been collected, ARCADIS began to arrange for the excavated soil to be removed from the plastic sheeting, which was located near the excavation, to a plastic-lined roll-off box, which was located on a higher terrace some distance from the excavation. To transport the excavated soil from the plastic sheeting to the roll-off box, ARCADIS directed SES to drive a front-end loader (also referred to as a track loader) from the higher terrace to the location of the excavated soil. After this task had been accomplished, Tetra Tech questioned ARCADIS regarding its plans for the rest of the day. ARCADIS indicated that further action was unlikely for the rest of the day. As a result, OEPA and Tetra Tech left the site at 4:30 p.m. and 5:00 p.m., respectively.

August 23, 2001

Upon arriving at the site at about 9:00 a.m., Tetra Tech observed that the excavated soil had been transferred from the plastic sheeting into the plastic-lined roll-off box. According to Kevin Patton of ARCADIS, the transfer of the soil was completed by about 8:00 p.m. the previous evening. Tetra Tech also observed that an area of about 160 by 70 feet adjacent to the excavation had been disturbed (see Photograph No. 4 in Appendix A). Within the disturbed area, Tetra Tech observed stained soil and noted a petroleum odor similar to that in the trench. The disturbance of the area reportedly resulted from SES's attempts to drive the front-end loader, which was loaded with excavated soil, from the excavation area to the roll-off box on the higher terrace through an area of wet soil. According to ARCADIS, while attempting to use this route the front-end loader sank about 3 feet into the higher terrace. SES spent

about 1.5 hours digging the front-end loader out using other equipment. SES subsequently established an alternate route bypassing the wet soil and the soil transfer was completed.

ARCADIS and SES began to clean up the disturbed area. After the disturbed area had been leveled (using topsoil from the surrounding area) (see Photograph No. 5 in Appendix A), grass seed and straw were spread throughout the area (see Photograph No. 6 in Appendix A). ARCADIS made the decision to spread the grass seed and straw.

Dave Vicarel of ARCADIS directed his personnel to discontinue installation of well points and move to the OMS facility to install stream gauges in Monroe Ditch. The first stream gauge was installed between the closed solid waste landfills along the west side of the OMS facility at location Stream Gauge Monroe Ditch (SGMD) 2 (see Appendix B). The stream gauge was fastened to a 16-foot-long, 4-inch-wide, 4-inch-thick board. SES and ARCADIS attached the board to the outflow end of the culvert pipe in a vertical position with the bottom portion resting on the creek bed (see Photograph No. 7 in Appendix A).

At 4:00 p.m., ARCADIS and SES moved to the south side of the OMS facility to install a second stream gauge at location SGMD1 (see Appendix B). The stream gauge was installed at this location in the same manner as described above for location SGMD2 (see Photograph No. 8 in Appendix A). Because of the possibility that the water current or debris in Monroe Ditch might move the bottom portion of the stream gauge boards, ARCADIS informed Tetra Tech that the boards would be leveled using a carpenter's level before any flow measurements were recorded.

Because well point installation activities had been discontinued and stream gauge installation activities had been completed, Tetra Tech left the site at 5:20 p.m.

APPENDIX A
PHOTOGRAPHIC LOG
(Four Pages)

AK5 042593



Photograph No. 1

Location: South side of Dick's Creek (DC), west of Yankee Road

Orientation: Downward

Date: August 22, 2001

Description: Trench excavated perpendicular to DC for placement of well point



Photograph No. 2

Location: South side of DC, west of Yankee Road

Orientation: Downward

Date: August 22, 2001

Description: Boom material placed at location where trench entered DC



Photograph No. 3

Location: South side of DC, west of Yankee Road

Orientation: West

Date: August 22, 2001

Description: Ohio Environmental Protection Agency personnel collecting samples from excavated soil



Photograph No. 4

Location: South side of DC, west of Yankee Road

Orientation: East

Date: August 23, 2001

Description: Disturbed area west of location designated for well point installation

AK5 042595



Photograph No. 5

Location: South side of DC, west of Yankee Road

Orientation: West

Date: August 23, 2001

Description: Superior Environmental Services (SES) leveling disturbed area



Photograph No. 6

Location: South side of DC, west of Yankee Road

Orientation: East

Date: August 23, 2001

Description: Grass seed and straw placed over disturbed area



Photograph No. 7

Location: Stream Gauge Monroe Ditch (SGMD) 2

Orientation: East

Date: August 23, 2001

Description: SES fastening stream gauge to culvert pipe along Monroe Ditch



Photograph No. 8

Location: SGMD1

Orientation: South

Date: August 23, 2001

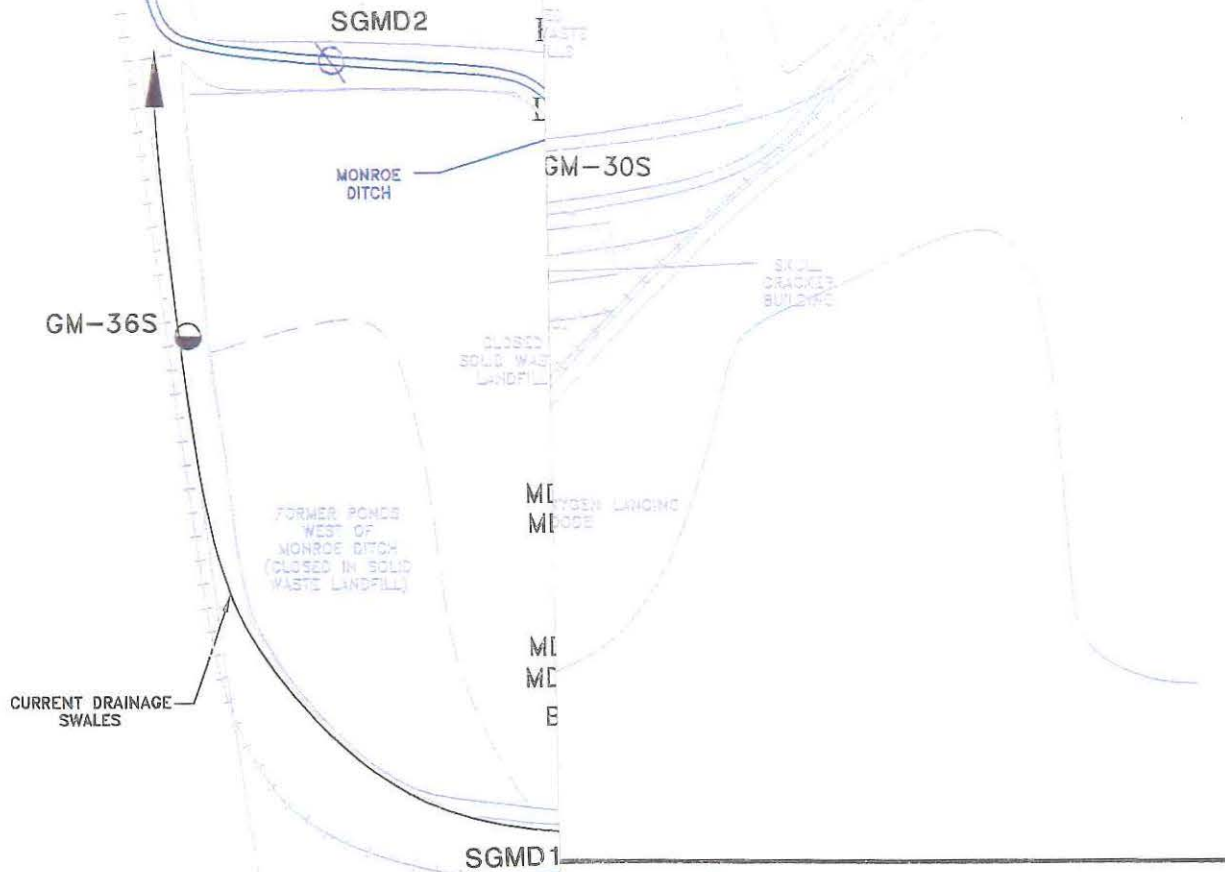
Description: SES fastening stream gauge to culvert pipe along Monroe Ditch

AK5 042597

APPENDIX B
MONITORING POINT INSTALLATION MAP
(One Sheet)

AK5 042598

LOCATION OF TRACKHOE
EXCAVATION ACTIVITIES
NEAR ORMAN WELDING
AT YANKEE RD.
(ABOUT 300 FT. WEST
OF LOCATION SHOWN)



LEGEND

- TRANSFORMER
- MONITORING WELL IN UPPER AQUIFER
- MONITORING WELL IN INTERMEDIATE AQUIFER
- MONITORING WELL IN PERCHED ZONE
- BORING ONLY
- STREAM GAUGE LOCATION
- PROPOSED WELL POINT LOCATION

GMD = Stream Gauge Monroe Ditch

Source: Modified from **ARCADIS Gerghy & Miller**
Olympic Mills Service Op

ARCADIS GERAGHTY & MILLER



AK5 042599

| | | | |
|-------------|-----------------|--------------------------------|--------------------------------|
| WN SMITH | DATE 26FEB98 | PROJECT MANAGER R. ASTLE | DRAWING NAME AK\DELIN\SD-03 |
| | | LEAD DESIGN PROF. | CHECKED R. ASTLE |
| | | PROJECT NUMBER MI000848.006 | DRAWING NUMBER 15 |

APPENDIX C
FIELD LOGBOOK NOTES
(Five Sheets)

AK5 042600

122/01 Overcast, 75° 5-6 mi/hr. breeze

750 Petra Tech onsite @ OMS facility.

755 Kevin Patton of Acadia arrives onsite.

830 Juanita and John McGuinness of OCPA on site.

845 Superior Environmental Services (SES), a contractor hired by Arcadis arrives onsite.

1916 Arcadis leaves our facility to obtain key to areas on North side of facility

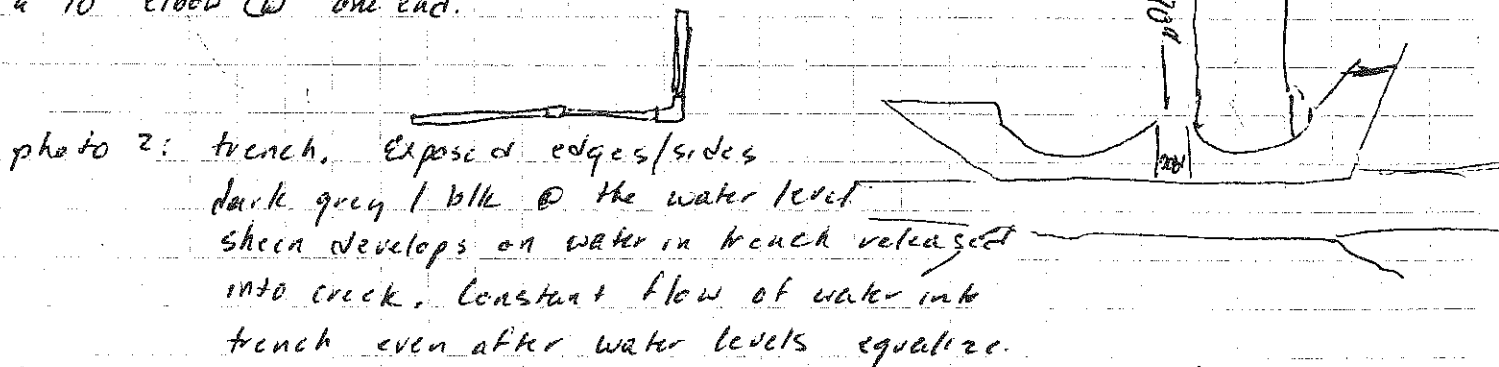
1915 Begins to rain & lightning

①15 move to Orman Welding location, Lightning frequently and close by stops movement of track hoe for safety reasons Heavy downpour.

1110 Move back here to position of piezometer
photo. i. SES locates deepest point in channel
to determine depth of the trench. 295 ft from bridge.

1135 SES associates dig a trench $\approx 7'$ deep and 12 ft away from the creek. Using a tripod SES assoc. determine the depth to be equal to the deepest point in the creek. Before setting the water indicator the sides of the trench fall into 4

140 SES associates assemble 2-10ft PVC w/
a 90° elbow @ one end.



1155 SES associates lower PVC into trench. Female/female joint fails while backfilling. SES removes PVC and backfilled materials.

Continued on Page

Read and Understood By _____

AK5 042601

- 1200 Tetra discussed concerns w/ OEPA regarding.
- Sheen being released into Dick's Creek.
 - Stained soil excavated, ^{strong} petroleum-oil odor.
 - Questioned how Dick's Creek was channelled & was the original creekbed excavated, capped, or just covered w/ soil.
 - Would silt control be a factor after back filling.
 - SOP 1 of the work plan states ~~stream gauges~~ perimeters will be driven into the creek bed.
 - Call Gary Lygan regarding these issues.
 - Does a complete & recent Work plan exist for this project.

1230 OEPA calls Gary Lygan w/ questions & concerns.

1330 Dave Viceral of Arcadis instructs Kevin Patten to do the following.

- 1- Stop excavation
- 2- Do not allow anyone into the creek or exposed to water from the creek.
- 3- Place excavated soil on poly sheeting
- 4- Order a roll off box to remove excavated soil.
- 5- Place boom material in creek to prohibit further release of the material causing the sheen.
- 6- Sample water where sheen is present
- 7- Sample excavated soil.
- 8- Discontinue installation of perimeters and ~~ground~~ water gauges.

Photo 4 - Virquea in background. Excavated soil.

1345 Tetra Tech discusses progress w/ OEPA.
Gary Lygan decides to stop installation

1350 SES associates place Virquea on ground to stockpile excavated soil.

1405 Roll off box arrives

1415 SES begins to move excavated soil to Virquea ^{photo 5}

Continued on Page

- ① Creek water level has risen \approx 2 ft above the level upon arrival
- ① AK Steel associate arrives onsite.
- ① Track loader arrives. Now waiting for sample jars.
- ① OEPA personnel arrive w/ sample containers.
- ① SES excavates trench area as requested by OEPA.
- ① OEPA collects sample soil.
- ① Photo 6 excavation and soil sampling
- ① OEPA collects water sample from trench area.
- ① OEPA leaves site.
- ① Tetra Tech offsite.

AK5 042603

Ray Muzum

8/22/01

Continued on Page

8/23/01

- 0900 Tetra Tech onsite at Orman Welding facility. According to Kevin Patton, Arcadis, the following occurred after Tetra Tech left 8/22.
- Attempted to remove excavated soil w/ trackhoe @ \approx 1800. Trackhoe sank \approx 3ft into upper tier. SES assoc. spent \approx 1.5 hrs digging track hoe out w/ other equip.
 - Photo'd upper tier after track hoe removed. Gray/bk soil present. SES assoc. attempting to level area.
 - Removed excavated soil and placed in rolloff box located on 2nd tier. SES establishes another path for track hoe closer to bridge to avoid muddy area.
 - Fill was not brought in to fill trench. According to Kevin, Trench collapsed and was leveled using topsoil from the surrounding area.
 - Today's plan - level lower tier and trench area.
 - Reseed area and cover w/ straw.
 - Move to Monroe ditch.
 - Dave Vicarel will visit this location after lunch.
- 0950 SES returns w/ bales of straws. Begin to spread straw and seed.
- 1030 Called Eric Morton - left message regarding progress.
Called Gary Cygan and left message regarding progress.
- 1100 Gary Cygan calls Tetra Tech. Instructed to oversee the remediation @ Orman welding. Tetra Tech will stay to oversee the installation of water level/staff gauges.
- 1300 SES finish seeding and covering disturbed area w/ straw. Jeanita Nordstrom of DEPA onsite.
- 1330 Arcadis moves to OMS facility to install staff gauges in Monroe ditch.
- 1400 Move excavator to Location Monroe Ditch to clear area above culvert SGMD2 location

1415 Dave Vicarel arrives onsite. SES removes small tree from culvert top. Wait for Kevin Patton to return w/ 4x4's to mount staff gauges to.

1445 Arcadis returns w/ 14' 4x4 lumber. mounts staff gauges to 4x4 and lowers over end of culvert pipe. Will bolt 4x4 @ top of culvert pipe. Arcadis attaches 5' section of stream gauges. Arcadis will order another 5' section to add to top of 5' section.

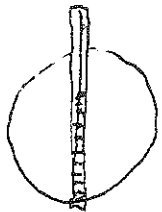
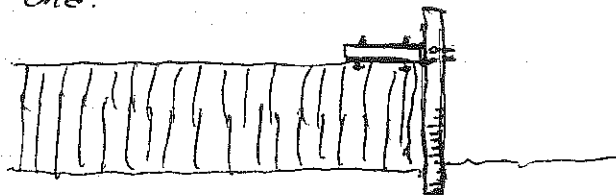


photo SES assoc. installing stream gauge by bolting a 3' section of 4x4 horizontally then bolt vertical section @ end.



600 Move to next location along Monroe ditch. SGMD1

S - stream

G - gauge

M - Monroe

D - ditch

1

- Location @ the south west corner of OWS facility.

- Stream gauge attached to culvert

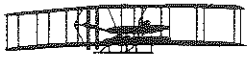
700 SES and Arcadis finish installing stream gauge @ SGMD1 location

720 Tetra Tech off sight.

AK5 042605

Ray M. [Signature]
Continued on Page 8/23/01

Read and Understood By



WRIGHT STATE UNIVERSITY

Institute for Environmental Quality
064 Brehm Lab
3640 Colonel Glenn Hwy.
Dayton, OH 45435-0001
(937) 775-2201
FAX (937) 775-4997
e-mail: ieqstaff@wright.edu

Date: September 27, 2001

To: Eric Morton, Project Manager

From: Allen Burton

Re: Response to ARCADIS Letter of July 5, 2001 on Wright State University
Data

We have reviewed the letter from Dr. Barber and are pleased to offer the following responses (below). If you have any further questions do not hesitate to ask.

Sincerely,

G. Allen Burton, Jr., Ph.D.
Brage Golding Distinguished Professor of Research and Director

Attachments:

WSU database (electronic)
New data (received after ERA completed)
QA program documentation

AK5 042645

Copy of ARCADIS letter with Responses Added in Bold

Subject: AK Steel Corporation, Middletown Works
RCRA 7003 Order, Docket Number R7003-5-00-002
Wright State University Data for Dick's Creek, Ohio

5 July 2001

ARCADIS Project No.: M1000848.0001
Contact:

Dear Mr. Cygan:

AK Steel and ARCADIS G&M first became aware that Allen Burton at Wright State Extension: University (WSU) was conducting research in Dick's Creek following a presentation 11 of preliminary results at the 1999 meeting of the Society for Environmental Toxicology and Chemistry (SETAC). When contacted, Dr. Burton declined to make additional information available regarding his study or its results. The U.S. Environmental Protection Agency (USEPA) later referenced WSU data in the subject order, dated August 17, 2000. AK Steel then requested the data from USEPA. USEPA responded on September 22, 2000 with a largely qualitative package that included a copy of the SETAC presentation but did not include a useable data set. ARCADIS G&M again requested data and supporting documentation in an email to Gary Cygan dated March 20, 2001. Subsequently, in its comments on Revision 1 of the Human Health and Ecological Risk Assessment Work Plan (undated, received in April 2001), USEPA requested that AK Steel incorporate the WSU data in the risk assessments for the site. After additional requests by AK Steel, USEPA provided an Excel spreadsheet on May 8, 2001. However, it was not possible to interpret or even understand the data based on the information contained in the spreadsheet. AK Steel submitted a letter request for supporting information, and USEPA responded with a package of limited supporting documentation on May 25, 2001.

ARCADIS G&M has reviewed the WSU data spreadsheet and supporting documentation. After this review, we have serious reservations about the quality and usability of the data. It is clear that these data were not collected under the strict quality assurance/quality control (QA/QC) procedures expected of AK Steel. A list of questions and requests for additional information is provided below. AK Steel cannot use the data without the requested information. Please respond to each point to facilitate the review and interpretation of the WSU data.

General Response:

The overall language in the letter of July 5, 2001 suggests ARCADIS is not aware of the purpose of the Wright State University (WSU) study as it relates to study design, data collection procedures and its subsequent use in the Ecological Risk Assessment (ERA) of Dicks Creek. The WSU study was a competitive research grant awarded by the U.S. Environmental Protection Agency (USEPA) Office of Research and Development's STAR (Science to Achieve Results) Program. This grant, entitled "Sediment Contamination Methods: Validation of Standardized and Novel Approaches" (EPA Grant Number R826200) was awarded to Drs. Burton, Krane and Tiernan (WSU), Landrum (NOAA), Stubblefield (ENSR Consulting & Engineering), and Clements (Colorado State University)

AK5 042646

for the period of December 1, 1997 – November 30, 2000. Prior and during the grant award, WSU also conducted unsponsored research as part of four Master of Science and Doctoral thesis projects that focused on developing *in situ* methods for determining bioaccumulation and toxicity of chemical stressors in aquatic invertebrates.

The objectives of the STAR project were to: (1) determine whether freshwater sediment criteria and standard USEPA acute and chronic toxicity and bioaccumulation tests are appropriate indicators of ecological risk, and (2) develop an effective approach to evaluate sediment contamination which includes: (a) an *in situ* component for sampling and testing to reduce uncertainty in determinations of risk, and (b) appropriate models for predicting sediment quality criteria. Field sites for this project included 3 sites: the Clark Fork River in Butte, Montana; the Little Scioto River in Marion, Ohio; and Dicks Creek. The STAR program is a highly competitive, peer-reviewed process, only funding ~ 5 – 10% of submitted proposals. Proposals require a quality assurance/quality control plan. *None of the data collected by WSU and used in the ERA were collected for purposes of conducting an ERA or for litigation purposes.* Since it was a research project, test methods and sampling sites varied through the project as the methods were optimized and additional data was analyzed. When the USEPA requested to use WSU data as part of an ERA, chain-of-custody (COC) forms were added to the STAR project QA/QC procedures, affecting the final field season in year 2000. However, since this was purely a research project, there was no reason to use COC forms prior to this time. Extensive QC documentation was not possible for the research project due to the limited budget available for chemical analyses.

The goal of the STAR grant is to further the science. To meet this goal the results of the WSU research have been presented to the scientific community via presentations at regional to international scientific conferences, and as published abstracts, posters, technical reports and manuscripts in the peer-reviewed literature during the past 3 years. This has allowed for a significant degree of peer review and discussion with other scientists in this field. Indeed, the response to the WSU research has been extremely positive, with several recent invited presentations at USEPA, national and international conferences, requests to conduct similar procedures at other USEPA Superfund sites, and requests for short-course training at national meetings. Finally, the American Society for Testing and Materials, and the USEPA have requested that WSU develop standardized guidance for the WSU *in situ* methods based on the useful results of this STAR project.

Specific Responses to ARCADIS Comments:

1. The Dick's Creek sample location map indicates that samples were collected at Outfall 003, Outfall 002, and the confluence of Monroe Ditch and Dick's Creek. No WSU data were included for these locations. These locations are relevant to the risk assessments for the site, and any data collected there must be provided.

Response: These sites were only sampled during 1997-1999 as part of WSU research described above. These data as well as all other older data were reviewed and considered on a qualitative basis in terms of the sampling site locations, trends, and identifying compounds of concern, as to whether they should be included in the quantitative portion of the risk assessment. After evaluation of these older data, they were deemed less relevant for a quantitative risk assessment of current

conditions than data taken at the same locations, under chain of custody. Nevertheless, the older data are included in the database.

2. The supporting documentation indicates that extensive *in situ* and laboratory toxicity testing has been conducted at the site. If the USEPA considers the toxicity test results valid and intends for us to use them, it must provide the data. Supporting documentation and water quality data (dissolved oxygen, ammonia, etc.) must also be provided.

Response: Survival and water quality data are tabularized and are part of the EPA ORD database. The ERA (Chp. 4, pp. 35-38) provides a summary only of the trends of laboratory and field results from studies conducted at Dicks Creek during the 1998-2000 field seasons. Therefore, not all raw data for all tests were provided in this document. Tissue, sediment and water chemical results used in the ERA were the only data provided in their entirety.

3. Tissue data from the August 2000 sampling event were not provided. The WSU data file states "as of 10/9/2000 the tissue samples from 8/18/00 have not been received from the chemists." The WSU data compilation was provided to us well after October 2000 (7 months later), and the tissue data are most likely available and must be provided.

Response: Some data were received after the ERA was completed. They have been provided (attachment). It is interesting to note that these data support the ERA conclusions and, in addition, document tissue contamination of exposed amphipods. This note appears on Tab R of the ERA database. Data have been received from the chemistry lab and is provided in the "Dicks new ERA data" file (this is a separate data base).

4. The supporting documentation contains conflicting statements regarding *in situ* exposure durations. Page C-4 lists the exposure duration for the invertebrates *Chironomus tentans*, *Hyalella azteca*, and *Lumbriculus variegatus* as "5-10d," whereas page C-5 states that "after 48h, 1 wk, 2 wk, 3 wk and 4 wks of exposure, four replicates were gently removed from the stream bed." Exposure durations must be provided on a sample-by-sample basis. This information is critical for inclusion of tissue data in the risk assessment for aquatic-feeding wildlife.

Response: The statements are not conflicting, rather show that exposure periods varied depending on the research experiments. Five – ten day exposures were used in the EPA ORD study, 48 hr to 4 week exposures were used in a MS thesis project. In 1998, *in situ* exposures were 7d for all organisms: *H. azteca*, *C. tentans*, *D. magna*, *P. promelas* and *L. variegatus*. 1999 and 2000 *in situ* exposures were 3d for *P. promelas* and *D. magna* and 4d for *H. azteca*, *C. tentans*, and *L. variegatus*. For further clarification see the following table:

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| Study | Year | Organisms | Exposure Period |
|----------------|-----------|---|-------------------------------|
| •EPA ORD | 1998 | <i>H. azteca</i> , <i>C. tentans</i> , <i>D. magna</i> <i>P. promelas</i> & <i>L. variegatus</i> | 7 days |
| •EPA ORD | 1999/2000 | <i>P. promelas</i> & <i>D. magna</i> | 3 days |
| | 1999/2000 | <i>H. azteca</i> , <i>C. tentans</i> & <i>L. variegatus</i> | 4 days |
| •M.S. Research | 1996-98 | <i>L. variegatus</i> & <i>H. azteca</i> | 48h, 1 wk, 2 wk, 3 wk & 4 wks |

5. The WSU data compilation includes no fish tissue analytical results (excepting one control fish sample analyzed for lipids). WSU has apparently prepared an ecological risk assessment for Dick's Creek, but it is difficult to understand how an appropriate site-specific assessment could be conducted for piscivorous wildlife without measurements of PCBs in whole-body fish tissue. The USEPA must confirm whether it has sponsored any analyses of whole-body fish tissue and provide any missing data.

Response: WSU did not collect fish tissue from Dicks Creek; therefore, fish tissue data provided by Ohio EPA were used in the risk assessment. These data values can be found in Table 13 and Appendix A4, "Exposure Characterization Calculations: Omnivorous fish, of the ERA. No fish lipid values were provided by OEPA, therefore, these values were taken from the literature as cited in the ERA.

6. The supporting documentation provided by USEPA refers to a Quality Assurance Project Plan (QAPP) for the US Environmental Protection Agency's Freshwater Sediment Toxicity Methods Evaluation (Burton, 1997). We have previously requested the QAPP for WSU's work at the Dick's Creek site. The USEPA must provide this document.

Response: QAPP provided (attachment)

7. Analytical methods are not provided for all analyses but are presumably included in the WSU QAPP and the analytical laboratory reports.

Response: Water, sediment and tissue chemical analysis methods conducted by the Dr. Tiernan's laboratory at WSU are summarized in Appendix F "Chemical Analyses" of the ERA. As discussed above, due to the limited budget of the ORD STAR grant project and differing objectives, the analytical labs did not provide extensive QA/QC documentation (see General Comments above and responses below for comments 12 and 13.)

8. Copies of the chain of custody forms were provided for only some of the analyses reported in the WSU data compilation. The remaining chain of custody forms must be provided.

Response: As discussed above, the research nature of the WSU studies did not dictate need for COCs; however they were used in 2000 (excluding a Ph.D. research project on groundwater-surface water interactions) after the ERA process began.

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We will check with the EPA to determine which COCs have been provided to ARCADIS and then make available missing COCs from 2000.

9. The chain of custody form for two "background" samples collected on 9/6/00 contains the note: "Steve Weil knows these samples are to arrive to replace the two that were contaminated with Durban." WSU must clarify how the samples were contaminated, as well as indicating whether "Durban" is a typographical error.

Response: The confluence water sample, collected 8/18/00 did contain Dursban. Since this was an unexpected result, the sample was collected again at the same site and reanalyzed for HIF. This second sample again contained traces of Dursban. Standard QA/QC lab blanks or other samples run concurrently with the Dicks Creek confluence sample did not contain Dursban. This indicates the background reference sample from the confluence did contain Dursban and QA/QC analyses were of high quality.

10. A chain of custody form for three porewater samples includes a sample collection date of 8/17/00 and "spin" dates (8/23/00 through 8/31/00). WSU must describe how these porewater samples were collected.

Response: Pore waters were collected according to ASTM, 1994 and Environment Canada, 1994a guidelines. Centrifugation of homogenized sediments at 10,000 g for 30 min.

11. The dates of analysis must be reported, to allow determination of whether recommended holding times were exceeded. The chain of custody forms indicate that water samples were provided to the analytical laboratories as many as ten days after sample collection.

Response: This information may be available if a list of specific samples in question is provided.

12. The USEPA has not provided quality control data from the analytical laboratories, even though the laboratories provided letters stating that this information is available. These data must be provided.

Response: Dr. Tiernan's laboratory (WSU) provided the information required to calculate detection limits for the most of the data analyzed by their laboratory. Additionally, laboratory control standards (Tiernan lab), lab blanks (Tiernan lab) and animal tissue tank blanks (Burton lab) were completed and are available. Tank blank data have been incorporated into the database, however, not all laboratory control standards and lab blanks have been incorporated and are located with the raw data in laboratory reports provided by the Tiernan lab. Data qualifiers, reporting limits and instrument detection limits were not provided by the Tiernan lab. Instrument detection limits, however, can be calculated by hand with the information provided by the Tiernan lab. Raw output lab reports can be provided.

13. The USEPA has not provided copies of the analytical laboratory data reports. Relevant information from these reports (e.g., qualifiers, reporting limits, instrument detection limits) is generally not included in the WSU data compilation. The laboratory data reports

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must be provided. Also, WSU must indicate whether the data entry has been checked against the laboratory reports.

Response: See above related responses, regarding research vs. litigation objectives. Data qualifiers and reporting limits are not available. The data have been spot checked against the original laboratory reports. See also response to comment no. 12.

14. The WSU data was not provided in database format, and conversion to database format will be cumbersome. Many laboratories provide electronic data deliverables in database format. If such electronic files are available from either WSU or the analytical laboratories, they must be provided.

Response: The WSU database provided to TetraTech for the ERA is in electronic, spreadsheet format (Microsoft Excel). Data are arranged by year and sample type.

15. The WSU data compilation uses inconsistent and sometimes obscure nomenclature for sample locations. This will unnecessarily complicate data management.

Response: As discussed above, these data were from research projects where the study design differed.

16. In the WSU data file, non-detect values are set to zero or left blank, and sample-specific reporting limits and instrument detection limits are not provided for most analytes. The USEPA has required that a non-zero surrogate value be substituted for non-detects for use in our risk assessments. Also, the practice of leaving non-detect cells blank makes it difficult to distinguish whether a constituent was not detected or was not analyzed. For example, it is not possible to determine whether the same suite of PCB congeners was included in all PCB analyses. This information should be included in the laboratory reports, which must be provided (as stated previously).

Response: WSU reported the data in the ERA database as they appeared on the original data reports provided by the analytical laboratory. On the electronic format of the database all non-detect values were flagged by a red comment flag and are noted as "ND" in the comment box. These flags may or may not appear on hard copies of the data. If values were reported by the lab were zero, they were entered as zero in the database. Since this was a research project, WSU was not required to substitute a non-zero surrogate value for non-detects.

17. A different reference area was used for each year of the WSU study. A rationale must be provided for the switching of reference areas. Also, WSU must indicate why Little Sugar Creek is an appropriate reference area for Dick's Creek. Little Sugar Creek is relatively distant from Dick's Creek (though it is close to WSU). As such, local weather patterns that may affect in situ toxicity and bioaccumulation in Dick's Creek would not necessarily be reflected in the results for Little Sugar Creek.

Response: As state above this was a research project, where selecting the optimal reference site was part of the research. After much testing, an acceptable reference location was not located within the Dicks Creek watershed area. All locations tested (i.e. Elk Creek, confluence of North and main branch) had unacceptable water

quality on occasion. Since a concurrent testing at reference location is required, Little Sugar Creek was evaluated as a reference site to satisfy protocol.

18. Four species (*Pimephales promelas*, *Daphnia magna*, *Corbicula fluminea*, and *Hexigenia limbata*) were not included in the tissue data set but are listed as toxicity test organisms in the supporting documentation. A chain of custody form indicates that *Corbicula* samples were submitted for analysis. WSU must clarify whether tissue analyses were ever conducted for these species and provide any missing data.

Response: *P. promelas*, *D. magna* and *H. limbata* were not analyzed due to insufficient tissue quantities. *C. fluminea* were not analyzed from MS thesis research due to budget constraints. Indigenous *Corbicula* tissue samples were submitted for analysis and results are available (attached data as: Burton WSU sample # 780, 781, 782, 783, 784, and CDC).

19. During the "1998" sediment sampling event (actually conducted in January, 1999), five sediment samples were collected at each sampling location. The WSU data file does not indicate any distinction between these samples. WSU must indicate whether the samples were collected as true replicates or are distinct in some way.

Response: The samples are distinct spatial samples collected in accordance with the EPA ORD study design for year one, to evaluate spatial toxicity. Individual sediment samples were labeled site sed-1, site sed-2..... site sed-5. Exact locations of sediment sample collection are noted in field notebooks and are within ~ 1 meter of each other.

20. Tissue samples for the October, 1998 sampling event were obtained from several *in situ* exposure methods. The exposure methods were inconsistent between the study area and reference locations, and between species. All locations and species included a water column (WC) exposure, and some locations and species included an "against sediment" (AS) exposure and a porewater chamber (PWC) exposure. No data are reported for the surficial sediment (SS) exposure described in the supporting documentation, although this exposure method is most representative of actual benthic invertebrate exposures occurring in the field. These discrepancies hinder data interpretation and must be explained.

Response: Again, the methods were not "inconsistent" as they were designed to address specific research questions accurately. During the October, 1998 *in situ* sampling event, *C. tentans*, *H. azteca*, *P. promelas*, *D. magna* and *L. variegatus* were exposed to either water column only (no sediments or sediment contact), against sediments (in direct sediment contact across chamber mesh) and surficial sediment exposure (chamber ½ filled with sediment). Chambers were placed at the Amanda School site on Dicks Creek and at Elk Creek. All organisms and treatment exposures were the same at each site, no tissue sample data indicates complete mortality of organisms for the treatment at that site. There was complete mortality of all organisms in the surficial sediment treatment at the Amanda School site. Porewater tissue samples were from a M.S. research experiment, also conducted in October of 1998.

21. It appears that the "1998" sediment PCB results for the Amanda School sample location were mislabeled as "dicks/elk." WSU must confirm whether this interpretation is correct.

Response: The "species" name is correct for the Amanda site, however the "site" name "dicks/elk" was in error on the original spreadsheet. The site AMD SED is in fact Amamda School site sediment.

22. Total organic carbon (TOC) and dissolved organic carbon (DOC) were not reported for the "1998" and 1999 sampling events, although they were analyzed for the sampling events in 2000. WSU must confirm that TOC and DOC were not analyzed in the earlier sampling events. These parameters are critical for interpreting analytical results for PCBs and PAHs.

Response: TOC and DOC were not analyzed for during years 1998 and 1999.

23. The "Beaver Dam" location sampled in 1999 is shown on WSU's map but is not included in the verbal description of sample locations. This location must be described.

Response: "Beaver Dam" is located at Dicks Creek river mile 2.36, between the USGS gauging station site and the Amanda School site.

24. Polychlorinated biphenyl (PCB) and lipid data are provided for a tissue sample labeled "indigenous," collected from the North Branch/Dick's Creek confluence in 1999. The species of the sampled organism(s) must be provided.

Response: The indigenous sample was a collection of oligochaete worms from sediments in the confluence of the north and main branches of Dicks Creek.

25. The only other "indigenous" samples were reported for three unidentified locations sampled in 1999 (labeled as LSR/G.camp, LSR.P.Hill, and LSR/203). Only lipid data were reported for these samples. These sample locations must be identified and mapped, and the species must be identified. Also, it is unclear why samples would be collected and analyzed only for lipids. WSU must confirm whether PCB analyses were conducted for these samples and provide any missing data.

Response: These samples were collected from the Little Scioto River in Marion, Ohio so the results are irrelevant. As discussed above, the Little Scioto River is another site under the USEPA ORD grant, but should not have been included with this Dicks Creek database. The Dicks Creek data were extracted from a larger database that contained data from all three of the sites studied under the EPA ORD grant. The database now clearly identifies these data as irrelevant to the ERA.

26. The WSU data compilation contains the note: "as of 101912000 the indigenous samples from 1018199 have not been received from the chemists." This note appears to apply only to PAH analytical results. The data compilation does not contain a note regarding PCB results for the three unidentified locations. WSU must state which "indigenous" tissue samples were supposed to be analyzed for PAHs and clarify the current status of the PAH data.

Response: Results from these tissue samples have been returned and are available in the "Dicks new ERA data" file (separate file). Samples were for PAHs and PCBs from the following:

780 – indigenous *Corbicula* Amanda School site, 8/00

781 – indigenous *Corbicula*, USGS site, 8/00

782 – indigenous *Corbicula*, Amanda School site, 10/99

783 – indigenous *Corbicula*, Beaver dam site, 10/99

784 – indigenous *Corbicula*, Caesar Creek site, 10/99

CDC – indigenous *L. variegatus*, Dicks Confluence site 10/99

YR-indig. – indigenous oligochaetes, Dicks landfill tributary 6/99

27. Tissue data for indigenous organisms are more relevant for wildlife risk assessment purposes than data from in situ or laboratory exposures. WSU must confirm whether all data for indigenous organisms have been provided.

Response: Those noted in 26 above are the only indigenous organisms collected at Dicks Creek by WSU for the EPA ORD grant. Indigenous *Lumbriculus* tissue from the landfill tributary (1998) was not included in the ERA database, although it was used in the WSU ERA. These data are now located in the "Dicks new ERA data" file)

28. Lipid concentrations were reported for *L. variegatus* tissue samples labeled as LSR/G.camp, LSR/P.Hill, and LSR/203. As stated previously, the locations for these samples must be properly identified. Also, the type of exposure must be indicated (e.g., in situ exposure method, laboratory test duration). Any PCB data or other analyses corresponding to these samples must be provided.

Response: See above response. These are Little Scioto River samples, therefore irrelevant. See response no. 25.

29. Tissue data (PCBs and lipids in *L. variegatus*) were provided for four 28-day laboratory tests conducted in 1999. One test used sediment from the Amanda School location, and the other three used sediment from unidentified locations (labeled as Trout farm, 50trout/50flori, and LSR/ref). The latter samples must be properly identified. If one or more of these samples was used as a control, it must be identified as such.

Response: These three sediments were laboratory controls used as reference samples. Trout Farm sediment is from a stream near WSU, 50 trout/50Flori is 50% Trout Farm sediment and 50% Flourisant soil and LSR is a reference site on the Little Scioto River.

30. Tissue concentrations of polycyclic aromatic hydrocarbons (PAHs) were provided for *L. variegatus* exposed *in situ* at two sample locations in 1999 (Beaver Dam and Caesar Creek). Although data were provided for WC, AS, and PWC exposures, no SS exposure was included. The SS exposure is the most representative of actual benthic invertebrate exposures in the field. WSU must confirm that PAHs in tissue were not measured for the SS exposure.

Response: PAHs were measured in *L. variegatus* samples exposed to WC, AS, and PWC exposures at Beaver dam and Caesar Creek only. They were not measured in

SS samples at any of the *in situ* test sites during this exposure period due to budget limitations.

31. Tissue concentrations of PCBs and lipids were reported for a *H. azteca* water- only control for a 4-day laboratory test conducted in 1999. No other data were provided for *H. azteca* 4-day laboratory tests. All test data associated with the *H. azteca* control sample must be provided.

Response: *H. azteca* tissue samples were not analyzed from this experiment although survival was high enough to accommodate enough tissue mass for analysis; again due to budget limitations.

32. A tissue lipid concentration was reported with the 1999 data for an unspecified fathead minnow (*Pimephales promelas*) laboratory control sample. No other data were provided for fathead minnows. All fathead minnow data must be provided.

Response: Minnows were not analyzed due to budget limitations.

33. No PCB data are provided for the mini monitoring well (MW) sample collected from the USGS Gauging Station in June 2000. The data file contains the note: "where is this sample?" WSU must clarify the current status of the missing PCB data.

Response: This sample vial was broken and the contents lost prior to analysis (Tab I ERA database).

34. DOC data are reported for all water samples collected during the June 2000 sampling event, except the porewater samples collected using nested piezometers. WSU must confirm whether the piezometer samples were analyzed for DOC.

Response: No piezometer porewater samples were analyzed for DOC due to limited sample volume.

35. The units must be provided for the depth of the piezometer samples.

Response: Piezometer sampling depths are in centimeters.

36. The DOC data reporting for the June 2000 sampling event is unclear, because both the surface water samples and the *in situ* chamber water samples for the WC exposure are labeled as "sw". A chain of custody form was not provided for these samples. It is possible that the June 28 samples were surface water, and the June 30 samples were from WC chambers. WSU must confirm whether this interpretation is correct.

Response: Yes, that is correct, the three "sw" samples collected on 6/30/00 are in fact WC samples from within the *in situ* chambers after exposure and not sw samples. The chain of custody forms for these samples are available. Note tab U of WSU ERA database. This was a data entry discrepancy only and will not effect interpretation of the *in situ* or exposure calculation results.

37. It appears that sediment TOC results are mislabeled as DOC, for both the June and August 2000 sampling events. WSU must confirm whether this interpretation is correct.

Response: TOC and DOC do not appear to be mislabeled for either June or August 2000 (Tabs T and U of the WSU ERA database). Labels are correct as they appear.

38. The WSU analytical program should have included TOC as well as DOC for water samples. The DOC analysis does not include organic carbon present on particles, which are filtered out of the sample for DOC analysis but not PCB analysis. However, the partitioning of PCBs between the freely dissolved and organic carbon-complexed phases is determined by both particulate and dissolved organic carbon. Freely dissolved concentrations are the most relevant concentrations for predicting aquatic toxicity.

Response: TOC was not analyzed for on any water sample from Dicks Creek. This would have been useful data, but could not be collected due to budget limitations.

39. It appears that for the herbicide, insecticide, and fungicide results for Little Sugar Creek (June, 2000), the sediment samples are mislabeled as water. Also, it appears that for the same location and date, the fungicide surface water results are mislabeled as sediment. WSU must confirm whether this interpretation is correct.

Response: Brookside Laboratories mislabeled the matrices for herbicide and insecticide in their report. On Tabs W and X of the ERA database, sample 303-LSC-062800, Lab number WEO63006, should be replaced by: 307-LSC-022800. The sample is a sediment, not a water sample as recorded. Brookside did not report the correct matrix of the sample as noted on the WSU chain of custody form for these samples. The matrices on the fungicide tab Y are correct. This discrepancy does not affect the ERA results or conclusions.

40. For the June 2000 sampling event, all samples that were analyzed for herbicides and insecticides were also analyzed for fungicides, except for surface water collected from the USGS Gauging Station. WSU must confirm whether this sample was analyzed for fungicides and provide any missing data.

Response: The surface water sample collected from the USGS gauging station during the 28 June, 2000 sample run was analyzed for fungicides and is listed in the WSU ERA database on Tab Y, sample number 313-US-062800, Lab number WEO630007.

41. Two sets of herbicide and insecticide results (all non-detect) are reported for surface water collected from the Amanda School location in June 2000. WSU must clarify the number of surface water samples analyzed.

Response: There was only one surface water sample from the Amanda School site collected 28 June 2000 that was analyzed for HIF. This was a duplication error, as entered. This is obvious as the sample number, lab number and data are identical. This duplication error was on the herbicide tab only. See ERA database Tabs W, X and Y.

42. For the June 2000 sampling event, tissue data are provided for c. tendons and L. variegatus "control tissue" samples. WSU must clarify how controls were designed for *in situ* tests.

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Response: These tissues were laboratory blanks taken from the same in- house cultures as organisms used for *in situ* toxicity testing. These tissues provided background tissue levels of contaminants analyzed for.

43. Data for blank samples are provided for the June 2000 sampling event (three blanks) and the August 2000 sampling event (two blanks). WSU must identify the blank type(s) (e.g., matrix, collection method) and the data to which the blanks were intended to apply.

Response: These were method blanks intended to accompany the data they are reported with. If the blank is grouped with sediments, then it is a sediment blank. Sediment and water samples are matrix blanks and tissue blanks are method blanks that are extracted and treated as a regular sample without the actual test material incorporated.

44. For the August 2000 sampling event, TOC data are provided for sediment collected from two Dick's Creek locations and Little Sugar Creek. No TOC data are provided for "background" sediment samples from the North Branch of Dick's Creek confluence or Monroe Ditch at Todd Hunter Road. WSU must confirm whether TOC was analyzed for these samples.

Response: Data are available for Todhunter Road and Confluence sites. WSU requested TOC analysis for these sediment samples, however, the samples were analyzed by ASTM method D2974 for total carbon (TC) as opposed to the requested total organic carbon. These data do not appear in the database as results were obtained after its release.

Additional Response to Question nos. 3, 18, 26 and 27: Data that arrived after the ERA was submitted are in *Dicks new ERA database* (MS Excel file). A review of the new tissue data (from August 2000 sampling) show PCB and PAH residues within the same range as the June 2000 data. Indigenous organism tissue residues were all within the model predictions for benthic species. Therefore, the conclusions of the ERA do not change and are further supported.

Finally, we restate our request for any and all data collected from Dick's Creek, its tributaries, and any reference areas, as well as any supporting documentation. This request includes but is not limited to the specific requests listed above.

Response: All data has been provided.

If you have any questions or require additional information, please contact me.

Sincerely,

Timothy R. Barber, Ph.D. Project Manager

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FOIA EXEMPT

DO NOT REMOVE

DRAFT



WRIGHT STATE
UNIVERSITY

Institute for Environmental Quality

064 Brehm Lab
3640 Colonel Glenn Hwy.
Dayton, OH 45435-0001
(937) 775-2201
(FAX (937) 775-4997
email: ieqstaff@wright.edu

Date: September 18, 2001

To: Eric Morton, Project Manager

From: Allen Burton

Re: Response to ARCADIS Letter of July 5, 2001 on Wright State University
Data

We have reviewed the letter from Dr. Barber and are pleased to offer the following responses (below). If you have any further questions do not hesitate to ask.

Sincerely,

G. Allen Burton, Jr., Ph.D.
Brage Golding Distinguished Professor of Research and Director

Attachments:
WSU database (electronic)
New data (received after ERA completed)
QA program documentation

AK5 042659

RECEIVED
DATE
BY
INITIALS

Copy of ARCADIS letter with Responses Added in Bold

Subject: AK Steel Corporation, Middletown Works
RCRA 7003 Order, Docket Number R7003-5-00-002
Wright State University Data for Dick's Creek, Ohio

5 July 2001

ARCADIS Project No.: M1000848.0001
Contact:

Dear Mr. Cygan:

AK Steel and ARCADIS G&M first became aware that Allen Burton at Wright State Extension: University (WSU) was conducting research in Dick's Creek following a presentation 11 of preliminary results at the 1999 meeting of the Society for Environmental Toxicology and Chemistry (SET AC). When contacted, Dr. Burton declined to make additional information available regarding his study or its results. The U.S. Environmental Protection Agency (USEPA) later referenced WSU data in the subject order, dated August 17, 2000. AK Steel then requested the data from USEPA. USEPA responded on September 22, 2000 with a largely qualitative package that included a copy of the SETAC presentation but did not include a useable data set. ARCADIS G&M again requested data and supporting documentation in an email to Gary Cygan dated March 20, 2001. Subsequently, in its comments on Revision 1 of the Human Health and Ecological Risk Assessment Work Plan (undated, received in April 2001), USEPA requested that AK Steel incorporate the WSU data in the risk assessments for the site. After additional requests by AK Steel, USEPA provided an Excel spreadsheet on May 8, 2001. However, it was not possible to interpret or even understand the data based on the information contained in the spreadsheet. AK Steel submitted a letter request for supporting information, and USEPA responded with a package of limited supporting documentation on May 25, 2001.

ARCADIS G&M has reviewed the WSU data spreadsheet and supporting documentation. After this review, we have serious reservations about the quality and usability of the data. It is clear that these data were not collected under the strict quality assurance/quality control (QA/QC) procedures expected of AK Steel. A list of questions and requests for additional information is provided below. AK Steel cannot use the data without the requested information. Please respond to each point to facilitate the review and interpretation of the WSU data.

General Response:

The overall language in the letter of July 5, 2001 suggests ARCADIS is not aware of the purpose of the Wright State University (WSU) study as it relates to study design, data collection procedures and its subsequent use in the Ecological Risk Assessment (ERA) of Dicks Creek. The WSU study was a competitive research grant awarded by the U.S. Environmental Protection Agency (USEPA) Office of Research and Development's STAR (Science to Achieve Results) Program. This grant, entitled "Sediment Contamination Methods: Validation of Standardized and Novel Approaches" (EPA Grant Number R826200) was awarded to Drs. Burton, Krane and Tiernan (WSU), Landrum (NOAA), Stubblefield (ENSR Consulting & Engineering), and Clements (Colorado State University) for the period of December 1, 1997 - November 30, 2000. Prior and during the grant award, WSU also conducted unsponsored research as part of four Master of Science and

AK5 042660

Doctoral thesis projects that focused on developing *in situ* methods for determining bioaccumulation and toxicity of chemical stressors in aquatic invertebrates.

The objectives of the STAR project were to: (1) determine whether freshwater sediment criteria and standard USEPA acute and chronic toxicity and bioaccumulation tests are appropriate indicators of ecological risk, and (2) develop an effective approach to evaluate sediment contamination which includes: (a) an *in situ* component for sampling and testing to reduce uncertainty in determinations of risk, and (b) appropriate models for predicting sediment quality criteria. Field sites for this project included 3 sites: the Clark Fork River in Butte, Montana; the Little Scioto River in Marion, Ohio; and Dicks Creek. The STAR program is a highly competitive, peer-reviewed process, only funding ~ 5 - 10% of submitted proposals. Proposals require a quality assurance/quality control plan. *None of the data collected by WSU and used in the ERA were collected for purposes of conducting an ERA or for litigation purposes.* Since it was a research project, test methods and sampling sites varied through the project as the methods were optimized and additional data was analyzed. When the USEPA requested to use WSU data as part of an ERA, chain-of-custody (COC) forms were added to the STAR project QA/QC procedures, affecting the final field season in year 2000. However, since this was purely a research project, there was no reason to use COC forms prior to this time. Extensive QC documentation was not possible for the research project due to the limited budget available for chemical analyses.

The goal of the STAR grant is to further the science. To meet this goal the results of the WSU research have been presented to the scientific community via presentations at regional to international scientific conferences, and as published abstracts, posters, technical reports and manuscripts in the peer-reviewed literature during the past 3 years. This has allowed for a significant degree of peer review and discussion with other scientists in this field. Indeed, the response to the WSU research has been extremely positive, with several recent invited presentations at USEPA, national and international conferences, requests to conduct similar procedures at other USEPA Superfund sites, and requests for short-course training at national meetings. Finally, the American Society for Testing and Materials, and the USEPA have requested that WSU develop standardized guidance for the WSU *in situ* methods based on the useful results of this STAR project.

Specific Responses to ARCADIS Comments:

1. The Dick's Creek sample location map indicates that samples were collected at Outfall 003, Outfall 002, and the confluence of Monroe Ditch and Dick's Creek. No WSU data were included for these locations. These locations are relevant to the risk assessments for the site, and any data collected there must be provided.

Response: These sites were only sampled during 1997-1999 as part of WSU research described above. These data were not included in the ERA as they were deemed too old to be relevant for a risk assessment of current conditions. The older data were reviewed and considered on a qualitative basis in terms of the sampling site locations, trends, identifying compounds of concern. The remedial efforts, such as installation of an interceptor trench by AK Steel also increase the uncertainty of the usefulness of pre-2000 data.

2. The supporting documentation indicates that extensive *in situ* and laboratory toxicity testing has been conducted at the site. If the USEPA considers the toxicity test

results valid and intends for us to use them, it must provide the data. Supporting documentation and water quality data (dissolved oxygen, ammonia, etc.) must also be provided.

Response: Survival and water quality data are tabularized and are part of the EPA ORD database. The ERA (Chp. 4, pp. 35-38) provides a summary only of the trends of laboratory and field results from studies conducted at Dicks Creek during the 1998-2000 field seasons. Therefore, not all raw data for all tests were provided in this document. Tissue, sediment and water chemical results used in the ERA were the only data provided in their entirety.

3. Tissue data from the August 2000 sampling event were not provided. The WSU data file states "as of 10/9/2000 the tissue samples from 8/18/00 have not been received from the chemists." The WSU data compilation was provided to us well after October 2000 (7 months later), and the tissue data are most likely available and must be provided.

Response: Some data were received after the ERA was completed. They have been provided (attachment). It is interesting to note that these data support the ERA conclusions and, in addition, document tissue contamination of exposed amphipods. This note appears on Tab R of the ERA database. Data have been received from the chemistry lab and is provided in the "Dicks new ERA data" file (this is a separate data base).

4. The supporting documentation contains conflicting statements regarding *in situ* exposure durations. Page C-4 lists the exposure duration for the invertebrates *Chironomus tentans*, *Hyalella azteca*, and *Lumbriculus variegatus* as "5-10d," whereas page C-5 states that "after 48h, 1 wk, 2 wk, 3 wk and 4 wks of exposure, four replicates were gently removed from the stream bed." Exposure durations must be provided on a sample-by-sample basis. This information is critical for inclusion of tissue data in the risk assessment for aquatic- feeding wildlife.

Response: The statements are not conflicting, rather show that exposure periods varied depending on the research experiments. Five - ten day exposures were used in the EPA ORD study, 48 hr to 4 week exposures were used in a MS thesis project. In 1998, *in situ* exposures were 7d for all organisms: *H. azteca*, *C. tentans*, *D. magna*, *P. promelas* and *L. variegatus*. 1999 and 2000 *in situ* exposures were 3d for *P. promelas* and *D. magna* and 4d for *H. azteca*, *C. tentans*, and *L. variegatus*. For further clarification see the following table:

| Study | Year | Organisms | Exposure Period |
|----------------|-----------|---|-------------------------------|
| ~EPA ORD | 1998 | <i>H. azteca</i> , <i>C. tentans</i> , <i>D. magna</i> <i>P. promelas</i> & <i>L. variegatus</i> | 7 days |
| ~EPA ORD | 1999/2000 | <i>P. promelas</i> & <i>D. magna</i> | 3 days |
| | 1999/2000 | <i>H. azteca</i> , <i>C. tentans</i> & <i>L. variegatus</i> | 4 days |
| ~M.S. Research | 1996-98 | <i>L. variegatus</i> & <i>H. azteca</i> | 48h, 1 wk, 2 wk, 3 wk & 4 wks |

AK5 042662

5. The WSU data compilation includes no fish tissue analytical results (excepting one control fish sample analyzed for lipids). WSU has apparently prepared an ecological risk assessment for Dick's Creek, but it is difficult to understand how an appropriate site-specific assessment could be conducted for piscivorous wildlife without measurements of PCBs in whole-body fish tissue. The USEPA must confirm whether it has sponsored any analyses of whole-body fish tissue and provide any missing data.

Response: WSU did not collect fish tissue from Dicks Creek; therefore, fish tissue data provided by Ohio EPA were used in the risk assessment. These data values can be found in Table 13 and Appendix A4, "Exposure Characterization Calculations: Omnivorous fish, of the ERA. No fish lipid values were provided by OEPA, therefore, these values were taken from the literature as cited in the ERA.

6. The supporting documentation provided by USEPA refers to a Quality Assurance Project Plan (QAPP) for the US Environmental Protection Agency's Freshwater Sediment Toxicity Methods Evaluation (Burton, 1997). We have previously requested the QAPP for WSU's work at the Dick's Creek site. The USEPA must provide this document.

Response: QAPP provided (attachment)

7. Analytical methods are not provided for all analyses but are presumably included in the WSU QAPP and the analytical laboratory reports.

Response: Water, sediment and tissue chemical analysis methods conducted by the Dr. Tiernan's laboratory at WSU are summarized in Appendix F "Chemical Analyses" of the ERA. As discussed above, due to the limited budget of the ORD STAR grant project and differing objectives, the analytical labs did not provide extensive QA/QC documentation (see General Comments above and responses below for comments 12 and 13.)

8. Copies of the chain of custody forms were provided for only some of the analyses reported in the WSU data compilation. The remaining chain of custody forms must be provided.

Response: As discussed above, the research nature of the WSU studies did not dictate need for COCs; however they were used in 2000 (excluding a Ph.D. research project on groundwater-surface water interactions) after the ERA process began. We will check with the EPA to determine which COCs have been provided to ARCADIS and then make available missing COCs from 2000.

9. The chain of custody form for two "background" samples collected on 9/6/00 contains the note: "Steve Weil knows these samples are to arrive to replace the two that were contaminated with Durban." WSU must clarify how the samples were contaminated, as well as indicating whether "Durban" is a typographical error.

Response: The confluence water sample, collected 8/18/00 did contain Dursban. Since this was an unexpected result, the sample was collected again at the same site and reanalyzed for HIF. This second sample again contained traces of Dursban. Standard QA/QC lab blanks or other samples run concurrently with the Dicks Creek confluence sample did not contain Dursban. This indicates the background

reference sample from the confluence did contain Dursban and QA/QC analyses were of high quality.

10. A chain of custody form for three porewater samples includes a sample collection date of 8/17/00 and "spin" dates (8/23/00 through 8/31/00). WSU must describe how these porewater samples were collected.

Response: Pore waters were collected according to ASTM, 1994 and Environment Canada, 1994a guidelines. Centrifugation of homogenized sediments at 10,000 g for 30 min.

11. The dates of analysis must be reported, to allow determination of whether recommended holding times were exceeded. The chain of custody forms indicate that water samples were provided to the analytical laboratories as many as ten days after sample collection.

Response: This information may be available if a list of specific samples in question is provided.

12. The USEPA has not provided quality control data from the analytical laboratories, even though the laboratories provided letters stating that this information is available. These data must be provided.

Response: Dr. Tiernan's laboratory (WSU) provided the information required to calculate detection limits for the most of the data analyzed by their laboratory. Additionally, laboratory control standards (Tiernan lab), lab blanks (Tiernan lab) and animal tissue tank blanks (Burton lab) were completed and are available. Tank blank data have been incorporated into the database, however, not all laboratory control standards and lab blanks have been incorporated and are located with the raw data in laboratory reports provided by the Tiernan lab. Data qualifiers, reporting limits and instrument detection limits were not provided by the Tiernan lab. Instrument detection limits, however, can be calculated by hand with the information provided by the Tiernan lab. Raw output lab reports can be provided.

13. The USEPA has not provided copies of the analytical laboratory data reports. Relevant information from these reports (e.g., qualifiers, reporting limits, instrument detection limits) is generally not included in the WSU data compilation. The laboratory data reports must be provided. Also, WSU must indicate whether the data entry has been checked against the laboratory reports.

Response: See above related responses, regarding research vs. litigation objectives. Data qualifiers and reporting limits are not available. The data have been spot checked against the original laboratory reports. See also response to comment no. 12.

14. The WSU data was not provided in database format, and conversion to database format will be cumbersome. Many laboratories provide electronic data deliverables in database format. If such electronic files are available from either WSU or the analytical laboratories, they must be provided.

Response: The WSU database provided to TetraTech for the ERA is in electronic, spreadsheet format (Microsoft Excel). Data are arranged by year and sample type.

15. The WSU data compilation uses inconsistent and sometimes obscure nomenclature for sample locations. This will unnecessarily complicate data management.

Response: As discussed above, these data were from research projects where the study design differed.

16. In the WSU data file, non-detect values are set to zero or left blank, and sample-specific reporting limits and instrument detection limits area not provided for most analytes. The USEPA has required that a non-zero surrogate value be substituted for non-detects for use in our risk assessments. Also, the practice of leaving non-detect cells blank makes it difficult to distinguish whether a constituent was not detected or was not analyzed. For example, it is not possible to determine whether the same suite of PCB congeners was included in all PCB analyses. This information should be included in the laboratory reports, which must be provided (as stated previously).

Response: WSU reported the data in the ERA database as they appeared on the original data reports provided by the analytical laboratory. On the electronic format of the database all non-detect values were flagged by a red comment flag and are noted as "ND" in the comment box. These flags may or may not appear on hard copies of the data. If values were reported by the lab were zero, they were entered as zero in the database. Since this was a research project, WSU was not required to substitute a non-zero surrogate value for non-detects.

17. A different reference area was used for each year of the WSU study. A rationale must be provided for the switching of reference areas. Also, WSU must indicate why Little Sugar Creek is an appropriate reference area for Dick's Creek. Little Sugar Creek is relatively distant from Dick's Creek (though it is close to WSU). As such, local weather patterns that may affect in situ toxicity and bioaccumulation in Dick's Creek would not necessarily be reflected in the results for Little Sugar Creek.

Response: As state above this was a research project, where selecting the optimal reference site was part of the research. After much testing, an acceptable reference location was not located within the Dicks Creek watershed area. All locations tested (i.e. Elk Creek, confluence of North and main branch) had unacceptable water quality on occasion. Since a concurrent testing at reference location is required, Little Sugar Creek was evaluated as a reference site to satisfy protocol.

18. Four species (*Pimephales promelas*, *Daphnia magna*, *Corbicula fluminea*, and *Hexigenia limbata*) were not included in the tissue data set but are listed as toxicity test organisms in the supporting documentation. A chain of custody form indicates that *Corbicula* samples were submitted for analysis. WSU must clarify whether tissue analyses were ever conducted for these species and provide any missing data.

Response: *P. promelas*, *D. magna* and *H. limbata* were not analyzed due to insufficient tissue quantities. *C. fluminea* were not analyzed from MS thesis research due to budget constraints. Indigenous *Corbicula* tissue samples were submitted for analysis and results are available (attached data as: Burton WSU sample # 780, 781, 782, 783, 784, and CDC).

19. During the "1998" sediment sampling event (actually conducted in January, 1999), five sediment samples were collected at each sampling location. The WSU data

file does not indicate any distinction between these samples. WSU must indicate whether the samples were collected as true replicates or are distinct in some way.

Response: The samples are distinct spatial samples collected in accordance with the EPA ORD study design for year one, to evaluate spatial toxicity. Individual sediment samples were labeled site sed-1, site sed-2..... site sed-5. Exact locations of sediment sample collection are noted in field notebooks and are within ~ 1 meter of each other.

20. Tissue samples for the October, 1998 sampling event were obtained from several *in situ* exposure methods. The exposure methods were inconsistent between the study area and reference locations, and between species. All locations and species included a water column (WC) exposure, and some locations and species included an "against sediment" (AS) exposure and a porewater chamber (PWC) exposure. No data are reported for the surficial sediment (SS) exposure described in the supporting documentation, although this exposure method is most representative of actual benthic invertebrate exposures occurring in the field. These discrepancies hinder data interpretation and must be explained.

Response: Again, the methods were not "inconsistent" as they were designed to address specific research questions accurately. During the October, 1998 *in situ* sampling event, *C. tentans*, *H. azteca*, *P. promelas*, *D. magna* and *L. variegatus* were exposed to either water column only (no sediments or sediment contact), against sediments (in direct sediment contact across chamber mesh) and surficial sediment exposure (chamber 1/2 filled with sediment). Chambers were placed at the Amanda School site on Dicks Creek and at Elk Creek. All organisms and treatment exposures were the same at each site, no tissue sample data indicates complete mortality of organisms for the treatment at that site. There was complete mortality of all organisms in the surficial sediment treatment at the Amanda School site. Porewater tissue samples were from a M.S. research experiment, also conducted in October of 1998.

21. It appears that the "1998" sediment PCB results for the Amanda School sample location were mislabeled as "dicks/elk." WSU must confirm whether this interpretation is correct.

Response: The "species" name is correct for the Amanda site, however the "site" name "dicks/elk" was in error on the original spreadsheet. The site AMD SED is in fact Amamda School site sediment.

22. Total organic carbon (TOC) and dissolved organic carbon (DOC) were not reported for the "1998" and 1999 sampling events, although they were analyzed for the sampling events in 2000. WSU must confirm that TOC and DOC were not analyzed in the earlier sampling events. These parameters are critical for interpreting analytical results for PCBs and PAHs.

Response: TOC and DOC were not analyzed for during years 1998 and 1999.

23. The "Beaver Dam" location sampled in 1999 is shown on WSU's map but is not included in the verbal description of sample locations. This location must be described.

Response: "Beaver Dam" is located at Dicks Creek river mile 2.36, between the

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USGS gauging station site and the Amanda School site.

24. Polychlorinated biphenyl (PCB) and lipid data are provided for a tissue sample labeled "indigenous," collected from the North Branch/Dick's Creek confluence in 1999. The species of the sampled organism(s) must be provided.

Response: The indigenous sample was a collection of oligochaete worms from sediments in the confluence of the north and main branches of Dicks Creek.

25. The only other "indigenous" samples were reported for three unidentified locations sampled in 1999 (labeled as LSR/G.camp, LSR.P.Hill, and LSR/203). Only lipid data were reported for these samples. These sample locations must be identified and mapped, and the species must be identified. Also, it is unclear why samples would be collected and analyzed only for lipids. WSU must confirm whether PCB analyses were conducted for these samples and provide any missing data.

Response: These samples were collected from the Little Scioto River in Marion, Ohio so the results are irrelevant. As discussed above, the Little Scioto River is another site under the USEPA ORD grant, but should not have been included with this Dicks Creek database. The Dicks Creek data were extracted from a larger database that contained data from all three of the sites studied under the EPA ORD grant. The database now clearly identifies these data as irrelevant to the ERA.

26. The WSU data compilation contains the note: "as of 101912000 the indigenous samples from 1018199 have not been received from the chemists." This note appears to apply only to PAH analytical results. The data compilation does not contain a note regarding PCB results for the three unidentified locations. WSU must state which "indigenous" tissue samples were supposed to be analyzed for PAHs and clarify the current status of the PAH data.

Response: Results from these tissue samples have been returned and are available in the "Dicks new ERA data" file (separate file). Samples were for PAHs and PCBs from the following:

780 – indigenous *Corbicula* Amanda School site, 8/00
781 – indigenous *Corbicula*, USGS site, 8/00
782 – indigenous *Corbicula*, Amanda School site, 10/99
783 – indigenous *Corbicula*, Beaver dam site, 10/99
784 – indigenous *Corbicula*, Caesar Creek site, 10/99
CDC – indigenous *L. variegatus*, Dicks Confluence site 10/99
YR-indig. – indigenous oligochaetes, Dicks landfill tributary 6/99

27. Tissue data for indigenous organisms are more relevant for wildlife risk assessment purposes than data from in situ or laboratory exposures. WSU must confirm whether all data for indigenous organisms have been provided.

Response: Those noted in 26 above are the only indigenous organisms collected at Dicks Creek by WSU for the EPA ORD grant. Indigenous *Lumbriculus* tissue from the landfill tributary (1998) was not included in the ERA database, although it was used in the WSU ERA. These data are now located in the "Dicks new ERA data" file)

28. Lipid concentrations were reported for *L. variegatus* tissue samples labeled as

LSR/G.camp, LSR/P.Hill, and LSR/203. As stated previously, the locations for these samples must be properly identified. Also, the type of exposure must be indicated (e.g., in situ exposure method, laboratory test duration). Any PCB data or other analyses corresponding to these samples must be provided.

Response: See above response. These are Little Scioto River samples, therefore irrelevant. See response no. 25.

29. Tissue data (PCBs and lipids in *L. variegatus*) were provided for four 28-day laboratory tests conducted in 1999. One test used sediment from the Amanda School location, and the other three used sediment from unidentified locations (labeled as Trout farm, 50trout/50flori, and LSR/ref). The latter samples must be properly identified. If one or more of these samples was used as a control, it must be identified as such.

Response: These three sediments were laboratory controls used as reference samples. Trout Farm sediment is from a stream near WSU, 50 trout/50Flori is 50% Trout Farm sediment and 50% Flourisant soil and LSR is a reference site on the Little Scioto River.

30. Tissue concentrations of polycyclic aromatic hydrocarbons (PAHs) were provided for *L. variegatus* exposed *in situ* at two sample locations in 1999 (Beaver Dam and Caesar Creek). Although data were provided for WC, AS, and PWC exposures, no SS exposure was included. The SS exposure is the most representative of actual benthic invertebrate exposures in the field. WSU must confirm that PAHs in tissue were not measured for the SS exposure.

Response: PAHs were measured in *L. variegatus* samples exposed to WC, AS, and PWC exposures at Beaver dam and Caesar Creek only. They were not measured in SS samples at any of the *in situ* test sites during this exposure period due to budget limitations.

31. Tissue concentrations of PCBs and lipids were reported for a *H. azteca* water-only control for a 4-day laboratory test conducted in 1999. No other data were provided for *H. azteca* 4-day laboratory tests. All test data associated with the *H. azteca* control sample must be provided.

Response: *H. azteca* tissue samples were not analyzed from this experiment although survival was high enough to accommodate enough tissue mass for analysis; again due to budget limitations.

32. A tissue lipid concentration was reported with the 1999 data for an unspecified fathead minnow (*Pimephales promelas*) laboratory control sample. No other data were provided for fathead minnows. All fathead minnow data must be provided.

Response: Minnows were not analyzed due to budget limitations.

33. No PCB data are provided for the mini monitoring well (MW) sample collected from the USGS Gauging Station in June 2000. The data file contains the note: "where is this sample?" WSU must clarify the current status of the missing PCB data.

Response: This sample vial was broken and the contents lost prior to analysis (Tab I ERA database).

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34. DOC data are reported for all water samples collected during the June 2000 sampling event, except the porewater samples collected using nested piezometers. WSU must confirm whether the piezometer samples were analyzed for DOC.

Response: No piezometer porewater samples were analyzed for DOC due to limited sample volume.

35. The units must be provided for the depth of the piezometer samples.

Response: Piezometer sampling depths are in centimeters.

36. The DOC data reporting for the June 2000 sampling event is unclear, because both the surface water samples and the in situ chamber water samples for the WC exposure are labeled as "sw". A chain of custody form was not provided for these samples. It is possible that the June 28 samples were surface water, and the June 30 samples were from WC chambers. WSU must confirm whether this interpretation is correct.

Response: Yes, that is correct, the three "sw" samples collected on 6/30/00 are in fact WC samples from within the *in situ* chambers after exposure and not sw samples. The chain of custody forms for these samples are available. Note tab U of WSU ERA database. This was a data entry discrepancy only and will not effect interpretation of the in situ or exposure calculation results.

37. It appears that sediment TOC results are mislabeled as DOC, for both the June and August 2000 sampling events. WSU must confirm whether this interpretation is correct.

Response: TOC and DOC do not appear to be mislabeled for either June or August 2000 (Tabs T and U of the WSU ERA database). Labels are correct as they appear.

38. The WSU analytical program should have included TOC as well as DOC for water samples. The DOC analysis does not include organic carbon present on particles, which are filtered out of the sample for DOC analysis but not PCB analysis. However, the partitioning of PCBs between the freely dissolved and organic carbon-complexed phases is determined by both particulate and dissolved organic carbon. Freely dissolved concentrations are the most relevant concentrations for predicting aquatic toxicity.

Response: TOC was not analyzed for on any water sample from Dicks Creek. This would have been useful data, but could not be collected due to budget limitations.

39. It appears that for the herbicide, insecticide, and fungicide results for Little Sugar Creek (June, 2000), the sediment samples are mislabeled as water. Also, it appears that for the same location and date, the fungicide surface water results are mislabeled as sediment. WSU must confirm whether this interpretation is correct.

Response: Brookside Laboratories mislabeled the matrices for herbicide and insectide in their report. On Tabs W and X of the ERA database, sample 303-LSC-062800, Lab number WEO63006, should be replaced by: 307-LSC-022800. The sample is a sediment, not a water sample as recorded. Brookside did not report the correct matrix of the sample as noted on the WSU chain of custody form for these

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samples. The matrices on the fungicide tab Y are correct. This discrepancy does not affect the ERA results or conclusions.

40. For the June 2000 sampling event, all samples that were analyzed for herbicides and insecticides were also analyzed for fungicides, except for surface water collected from the USGS Gauging Station. WSU must confirm whether this sample was analyzed for fungicides and provide any missing data.

Response: The surface water sample collected from the USGS gauging station during the 28 June, 2000 sample run was analyzed for fungicides and is listed in the WSU ERA database on Tab Y, sample number 313-US-062800, Lab number WEO630007.

41. Two sets of herbicide and insecticide results (all non-detect) are reported for surface water collected from the Amanda School location in June 2000. WSU must clarify the number of surface water samples analyzed.

Response: There was only one surface water sample from the Amanda School site collected 28 June 2000 that was analyzed for HIF. This was a duplication error, as entered. This is obvious as the sample number, lab number and data are identical. This duplication error was on the herbicide tab only. See ERA database Tabs W, X and Y.

42. For the June 2000 sampling event, tissue data are provided for c. tendons and L. variegatus "control tissue" samples. WSU must clarify how controls were designed for *in situ* tests.

Response: These tissues were laboratory blanks taken from the same in-house cultures as organisms used for *in situ* toxicity testing. These tissues provided background tissue levels of contaminants analyzed for.

43. Data for blank samples are provided for the June 2000 sampling event (three blanks) and the August 2000 sampling event (two blanks). WSU must identify the blank type(s) (e.g., matrix, collection method) and the data to which the blanks were intended to apply.

Response: These were method blanks intended to accompany the data they are reported with. If the blank is grouped with sediments, then it is a sediment blank. Sediment and water samples are matrix blanks and tissue blanks are method blanks that are extracted and treated as a regular sample without the actual test material incorporated.

44. For the August 2000 sampling event, TOC data are provided for sediment collected from two Dick's Creek locations and Little Sugar Creek. No TOC data are provided for "background" sediment samples from the North Branch of Dick's Creek confluence or Monroe Ditch at Todd Hunter Road. WSU must confirm whether TOC was analyzed for these samples.

Response: Data are available for Todhunter Road and Confluence sites. WSU requested TOC analysis for these sediment samples, however, the samples were analyzed by ASTM method D2974 for total carbon (TC) as opposed to the requested total organic carbon. These data do not appear in the database as results were

obtained after its release.

Additional Response to Question nos. 3, 18, 26 and 27: Data that arrived after the ERA was submitted are in *Dicks new ERA database* (MS Excel file). A review of the new tissue data (from August 2000 sampling) show PCB and PAH residues within the same range as the June 2000 data. Indigenous organism tissue residues were all within the model predictions for benthic species. Therefore, the conclusions of the ERA do not change and are further supported.

Finally, we restate our request for any and all data collected from Dick's Creek, its tributaries, and any reference areas, as well as any supporting documentation. This request includes but is not limited to the specific requests listed above.

Response: All data has been provided.

If you have any questions or require additional information, please contact me.

Sincerely,

Timothy R. Barber, Ph.D. Project Manager

AK5 042671



Tetra Tech EM Inc.

200 E. Randolph Drive, Suite 4700 ♦ Chicago, IL 60601 ♦ (312) 856-8700 ♦ FAX (312) 938-0118

September 10, 2001

Mr. Allen Wojtas
Work Assignment Manager
Enforcement and Compliance Assurance Branch
Waste, Pesticides and Toxics Division (DE-9J)
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Field Oversight Summary for Groundwater Sampling Activities
from August 7 through 9, 2001
AK Steel Facility, Middletown, Ohio
EPA Contract No. 68-W9-9018, Work Assignment No. R0580615**

Dear Mr. Wojtas:

Tetra Tech EM Inc. (Tetra Tech) is enclosing a summary of its field oversight observations during groundwater sampling activities conducted in the vicinity of the AK Steel facility in Middletown, Ohio. The sampling activities were conducted by ARCADIS Geraghty & Miller on behalf of AK Steel and took place in the Olympic Mills Services facility from August 7 through 9, 2001.

Please contact me at (312) 856-8791 or Eric Morton at (312) 856-8797 if you have any questions about the field oversight summary.

Sincerely,

for Kelly Hirsch
Project Manager

Enclosure

cc: Bernie Orenstein, EPA Regional Project Officer (letter only)
✓ Gary Cygan, EPA Technical Contact and Project Manager
Michael Mikulka, EPA Technical Advisor
Ed Schuessler, Tetra Tech Regional Manager (letter only)
Eric Morton, Tetra Tech Site Manager
Art Glazer, Tetra Tech Program Manager

**FIELD OVERSIGHT SUMMARY
FOR GROUNDWATER SAMPLING ACTIVITIES
AK STEEL FACILITY
MIDDLETOWN, OHIO**

August 7 through 9, 2001

Prepared for

**U.S. Environmental Protection Agency Region 5
Waste, Pesticides and Toxics Division
Chicago, IL 60604**

| | | |
|-----------------------------|---|---------------------------------------|
| Contract No. | : | 68-W9-9018 |
| Work Assignment No. | : | R0580615 |
| Date Prepared | : | September 10, 2001 |
| EPA Work Assignment Manager | : | Allen Wojtas |
| Telephone No. | : | (312) 886-6194 |
| Prepared by | : | Tetra Tech EM Inc. (Gary Musgrave) |
| Tetra Tech Project Manager | : | Kelly Hirsch |
| Telephone No. | : | (312) 856-8791 |

AK5 042673

**FIELD OVERSIGHT SUMMARY
FOR GROUNDWATER SAMPLING ACTIVITIES
AK STEEL FACILITY
MIDDLETOWN, OHIO**

Tetra Tech EM Inc. Oversight Personnel: Gary Musgrave
Reporting Period: August 7 through 9, 2001

1.0 INTRODUCTION

As requested by the U.S. Environmental Protection Agency (EPA) work assignment manager, Allen Wojtas, Tetra Tech EM Inc. (Tetra Tech) conducted field oversight of groundwater sampling activities performed by ARCADIS Geraghty & Miller (ARCADIS) on behalf of AK Steel in the vicinity of the AK Steel facility in Middletown, Ohio. These sampling activities were conducted at the Olympic Mills Services facility from August 7 through 9, 2001.

Tetra Tech's daily oversight observations are summarized in Section 2.0, and a tabular summary of groundwater sampling activities observed by Tetra Tech is provided in Appendix A. Photographs taken during field oversight activities are provided in Appendix B. A sampling location map is provided in Appendix C, and a copy of Tetra Tech's field logbook notes is provided in Appendix D.

2.0 DAILY OVERSIGHT OBSERVATIONS

Before sampling each well, ARCADIS measured the total well depth and depth to groundwater using a water level indicator. ARCADIS lowered either 1/4-inch-diameter tubing or a submersible pump into the well to a depth that coincided with the middle of the well's screened interval. According to ARCADIS, a screen section makes up the bottom 10 feet of each well. The middle of the screened interval was determined by subtracting 5 feet from the total well depth. Duct tape was then used to secure the tubing or pump at the designated depth. If the depth to groundwater was less than 20 feet, ARCADIS collected samples with a peristaltic pump. If the depth to groundwater was greater than 20 feet, ARCADIS collected samples with a submersible pump. According to the "Soil and Groundwater Investigation Plan," at least two well volumes are to be purged before a groundwater sample is collected for laboratory

analysis. When sufficient groundwater was available, ARCADIS purged four well volumes prior to sample collection. In the event that a well could not recharge at a sufficient rate to complete sampling of the well in 1 day, one additional well volume was purged before the well was sampled on the following day.

During the oversight period, ARCADIS collected field measurements of water quality parameters (temperature, pH, conductivity, turbidity, and salinity) at each sampling location initially using a multiparameter Horiba U-10 water quality meter. Problems arose on August 7, 2001, regarding the turbidity measurements made with this unit. Therefore, as discussed below, turbidity measurements were made on August 8, 2001, using a HF Scientific Model DRT-CE turbidity meter. Similar problems were identified with the measurements made using this new meter. As a result, ARCADIS collected turbidity measurements using a third meter—a Horiba U-22 water quality meter—on August 9, 2001.

At each monitoring well sampled, ARCADIS collected enough groundwater to satisfy the sample volume requirements for analyses for the following parameters:

| <u>Parameter</u> | <u>Sample Container</u> |
|---|--------------------------|
| • Polychlorinated biphenyls (PCB) | One 1-liter, amber jar |
| • Polynuclear aromatic hydrocarbons (PAH) | One 1-liter, amber jar |
| • Total metals | One 1-liter, plastic jar |
| • Dissolved metals | One 1-liter, plastic jar |

A summary of ARCADIS's groundwater sampling activities at each well is presented in Appendix A. After sampling was completed at each well, the tubing used was disposed of, and the submersible pump (if used) was decontaminated with Alconox and deionized water. Purged water was collected in drums for later disposal.

Tetra Tech oversight observations on August 7 through 9, 2001 are summarized below.

August 7, 2001

On August 7, 2001, ARCADIS collected groundwater samples from monitoring wells MDA23P, MDA03P, MDA03S, and MDA01P.

Throughout the day, Tetra Tech observed a wide range of turbidity readings for purged groundwater that appeared to be clear. For example, at well MDA01P, readings of -10, 0, and 15 nephelometric turbidity units (NTU) indicated that the element of the Horiba U-10 water quality meter that measures turbidity was not operating correctly. At 11:37 a.m., ARCADIS recalibrated this meter in the field but was unable to obtain consistent turbidity readings for the rest of the day. Therefore, turbidity requirements at monitoring wells MDA23P, MDA03P, MDA03S, and MDA01P may be inaccurate.

ARCADIS was unable to collect enough groundwater to satisfy the sample volume requirement for each laboratory analysis at wells MDA01P and MDA03P. As a result, ARCADIS decided to let these wells recharge overnight and to finish sampling them on the morning of August 8, 2001.

August 8, 2001

On August 8, 2001, at 7:05 a.m., ARCADIS collected a rinsate blank (RB-01-1-8-08-01) by pumping deionized water through unused tubing and the peristaltic pump into a set of sample jars.

In response to the inconsistent turbidity readings obtained on August 7, 2001, ARCADIS had obtained an HF Scientific Model DRT-CE turbidity meter. According to ARCADIS, this meter was calibrated by Hazco/Total Safety before it was delivered to ARCADIS.

ARCADIS finished sampling monitoring wells MDA01P and MDA03P and sampled wells MDA01S and MDA26S. A duplicate sample was collected at well MDA01S.

At 9:25 a.m., ARCADIS was unable to calibrate the turbidity meter. According to ARCADIS, a reading of less than or equal to 0.11 NTU had to be obtained before the meter was used. The lowest meter

reading obtained by ARCADIS during the calibration was 2.27 NTU. As a result, ARCADIS did not measure turbidity at well MDA26S.

At 12:20 p.m., Gary Cygan, the EPA technical contact and project manager for the AK Steel facility, arrived with Dave Vicarel of ARCADIS. EPA and Tetra Tech agreed that accurate turbidity data had to be obtained at the remaining wells before they were sampled. Mr. Cygan indicated that EPA would make a decision regarding the previously sampled wells with inconsistent turbidity data in the near future. Mr. Cygan also stated that the overall sampling procedures used by ARCADIS were adequate.

August 9, 2001

On August 9, 2001, ARCADIS collected groundwater samples from monitoring wells GM45S, MDA27S, GM46SR, and MDA08P.

During the day, ARCADIS used a Horiba U-22 water quality meter to measure water quality parameters at the wells sampled. According to ARCADIS, the meter was calibrated by Hazco/Total Safety before it was delivered to ARCADIS. The turbidity readings obtained were consistent throughout the day and appeared to be representative of the groundwater being collected.

APPENDIX A

**SUMMARY OF GROUNDWATER SAMPLING ACTIVITIES
OBSERVED BY TETRA TECH EM INC.**

(Two Pages)

AK5 042678

**SUMMARY OF GROUNDWATER SAMPLING ACTIVITIES
OBSERVED BY TETRA TECH EM INC.**

| Monitoring Well | Total Well Depth (ft) | Depth to Groundwater (ft) | Purge Attempt | Temperature (°C) | pH (standard unit) | Conductivity (Siemen/cm) | Turbidity (NTU) | Salinity (%) |
|-----------------|-----------------------|------------------------------|---------------|------------------|--------------------|--------------------------|-----------------|--------------|
| August 7, 2001 | | | | | | | | |
| MDA23P | 14.93 | 8.77 | 1 | 22.9 | 11.2 | 1.26 | 82 | 0.05 |
| | | | 2 | 23.2 | 11.29 | 1.36 | 77 | 0.06 |
| | | | 3 | 22.6 | 11.26 | 1.51 | 82 | 0.06 |
| | | | 4 | 23 | 11.26 | 1.53 | 81 | 0.07 |
| MDA03P | 18.47 | 14 | 1 | 20.8 | 12.23 | 3.76 | 82 | 0.18 |
| | | | 2 | 20.4 | 12.13 | 3.95 | 82 | 0.2 |
| MDA03S | 27.1 | 17.57 | 1 | 20 | 9.68 | 0.993 | 6 | 0.03 |
| | | | 2 | 20 | 8.9 | 0.999 | 83 | 0.04 |
| MDA01P | 18.62 | 16.74 | 1 | 22.1 | 6.93 | 2.63 | -10 | 0.11 |
| | | | 2 | 22.3 | 7.14 | 2.56 | 15 | 0.12 |
| | | | 3 | 22.3 | 7.13 | 2.6 | 15 | 0.12 |
| | | | 4 | 22.3 | 7.14 | 2.6 | 0 | 0.12 |
| August 8, 2001 | | | | | | | | |
| MDA01P | 18.62 | 16.74 (measured on 08/07/01) | 5 | 21.7 | 7.61 | 2.58 | 12.1 | 0.12 |
| MDA03P | 18.47 | 16.5 | 3 | 20 | 12.39 | 4.12 | 50.1 | 0.21 |
| MDA01S | 23.85 | 16.61 | 1 | 18.4 | 9.99 | 0.783 | 2.27 | 0.03 |
| | | | 2 | 17.9 | 9.97 | 0.708 | 1.37 | 0.03 |
| | | | 3 | 17.7 | 9.74 | 0.73 | 0.64 | 0.02 |
| | | | 4 | 18.1 | 9.65 | 0.691 | 0.65 | 0.03 |
| MDA26S | 18.15 | 6.63 | 1 | 24.3 | 12.53 | 8.1 | -- | 0.44 |
| | | | 2 | 24.7 | 12.52 | 7.98 | -- | 0.44 |
| | | | 3 | 24.6 | 12.54 | 8.05 | -- | 0.44 |
| | | | 4 | 24.5 | 12.55 | 8.11 | -- | 0.44 |
| August 9, 2001 | | | | | | | | |
| GM45S | 23.85 | 16.61 | 1 | 15.7 | 6.78 | 2.39 | 62.9 | 0.13 |
| | | | 2 | 14.9 | 7.01 | 2.64 | 6.8 | 0.13 |
| | | | 3 | 15 | 7.05 | 2.5 | 6.1 | 0.13 |
| | | | 4 | 14.9 | 7.21 | 2.54 | 9.8 | 0.13 |
| MDA27S | 27.5 | 13.97 | 1 | 21.3 | 12.25 | 4.96 | 38.7 | 0.27 |
| | | | 2 | 20.9 | 12.29 | 5.48 | 14.1 | 0.29 |
| | | | 3 | 21.7 | 12.29 | 5.44 | 7.1 | 0.29 |
| | | | 4 | 21.8 | 12.29 | 5.65 | 6 | 0.3 |

**SUMMARY OF GROUNDWATER SAMPLING ACTIVITIES
OBSERVED BY TETRA TECH EM INC. (Continued)**

| Monitoring Well | Total Well Depth (ft) | Depth to Groundwater (ft) | Purge Attempt | Temperature (°C) | pH (standard unit) | Conductivity (Siemen/cm) | Turbidity (NTU) | Salinity (%) |
|-----------------------------------|-----------------------|---------------------------|---------------|------------------|--------------------|--------------------------|-----------------|--------------|
| August 9, 2001 (Continued) | | | | | | | | |
| GM46SR | 28.54 | 13.97 | 1 | 22.2 | 12.28 | 5.78 | 6.9 | 0.31 |
| | | | 2 | 20.7 | 12.33 | 5.9 | 3.6 | 0.31 |
| | | | 3 | 20.9 | 12.29 | 5.94 | 3.9 | 0.31 |
| | | | 4 | 20.6 | 12.31 | 5.96 | 4 | 0.31 |
| MDA08P | 20.96 | 13.47 | 1 | 21 | 9.73 | 0.621 | 19.8 | 0.03 |
| | | | 2 | 21 | 9.88 | 0.627 | 15.5 | 0.03 |
| | | | 3 | 20.7 | 9.91 | 0.654 | 16.9 | 0.03 |
| | | | 4 | 21.1 | 9.96 | 0.66 | 16.2 | 0.03 |

Notes:

-- = Not measured; the HF Scientific Model DRT-CE turbidity meter was determined to be malfunctioning.
ft = Foot
NTU = Nephelometric turbidity unit
Siemen/cm = Siemen per centimeter

APPENDIX B
PHOTOGRAPHIC LOG
(Two Pages)

AK5 042681



Photograph No. 1

Orientation: West

Description: ARCADIS Geraghty & Miller (ARCADIS) collecting groundwater samples at well MDA23P using peristaltic pump

Location: Monitoring Well MDA23P

Date: August 7, 2001



Photograph No. 2

Orientation: South

Description: ARCADIS lowering submersible pump into well MDA01S

Location: Monitoring Well MDA01S

Date: August 8, 2001



Photograph No. 3

Orientation: Southwest

Description: ARCADIS collecting filtered groundwater sample at well GM45S

Location: Monitoring Wells GM45S

Date: August 9, 2001



Photograph No. 4

Orientation: West

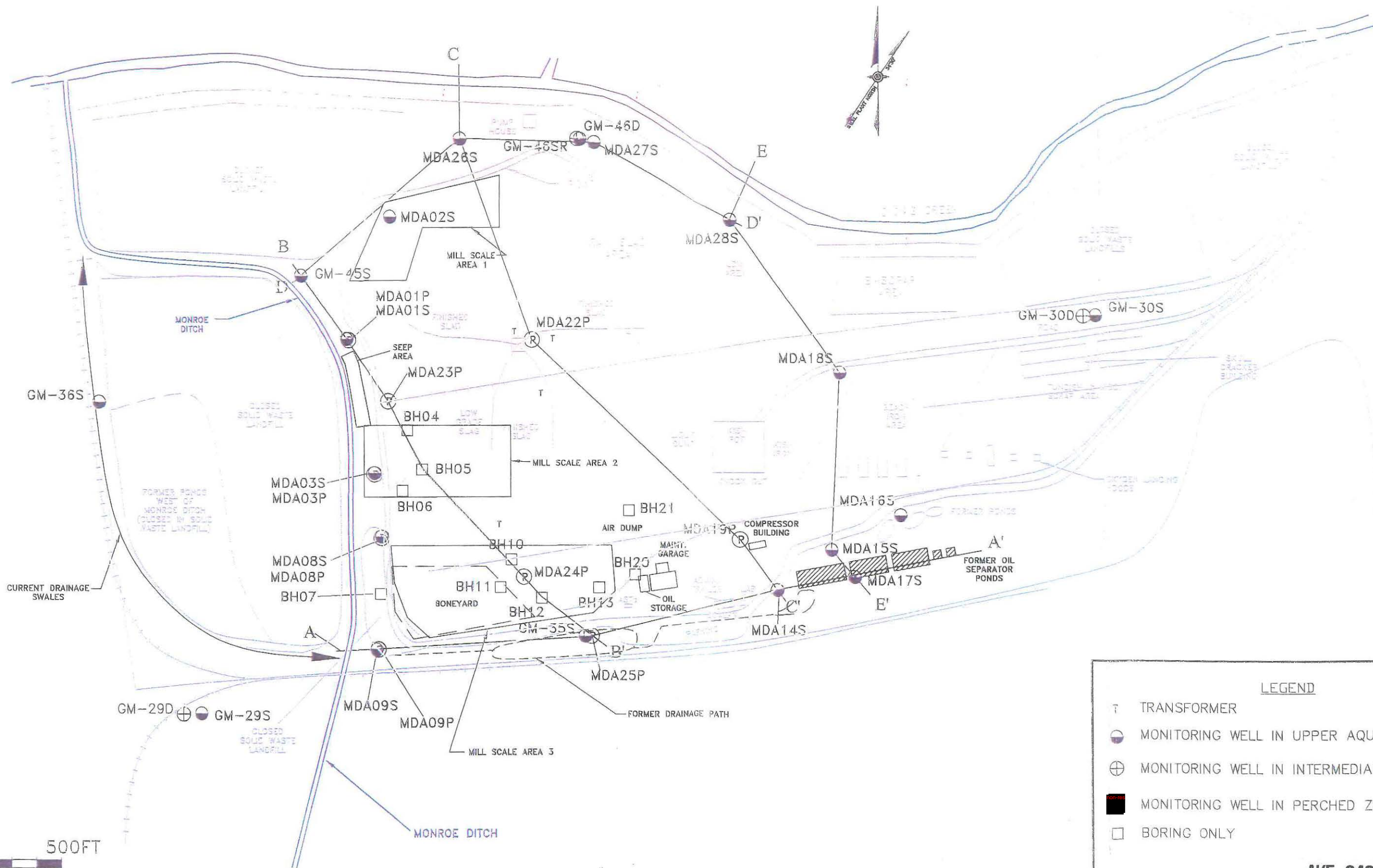
Description: Well MDA27S with submersible pump installed; well GM46SR in background

Location: Monitoring Wells GM46SR and MDA27S

Date: August 9, 2001

APPENDIX C
SAMPLING LOCATION MAP
(One Page)

AK5 042684



Source: ARCADIS Geraghty & Miller, 2001. "Groundwater and Soil Investigation Plan, Olympic Mills Service Operations Area, Middletown, Ohio." July 20.

LEGEND

- T TRANSFORMER
- MONITORING WELL IN UPPER AQUIFER
- ⊕ MONITORING WELL IN INTERMEDIATE AQUIFER
- MONITORING WELL IN PERCHED ZONE
- BORING ONLY

AK5 042685

ARCADIS GERAGHTY & MILLER



LINES OF CROSS SECTION
 OMS OPERATIONS AREA
 AK STEEL PROPERTY, MIDDLETOWN, OHIO

| | | | |
|-------------------|-----------------|--------------------------------|--------------------------------|
| DRAWN R. SMITH | DATE 26FEB98 | PROJECT MANAGER R. ASTLE | DRAWING NAME AK\DELIN\SD-03 |
| | | LEAD DESIGN PROF. | CHECKED R. ASTLE |
| | | PROJECT NUMBER MI000848.006 | DRAWING NUMBER 15 |

APPENDIX D
FIELD LOGBOOK NOTES
(Nine Sheets)

AK5 042686

AK Steel over site.

8/7/01

0645 Tetra Tech, Gary Musgrave, arrives onsite @ OMS Facility.

Temp: 89°, Hazy, humid.

0805 Dave Vicarel arrives @ OMS Facility.

0830 Kevin Patton and Hadley Stamm of Arcadis arrive onsite.
Tetra Tech & Arcadis associates sign in @ trailer.

0835 H&S meeting

0845 Tetra Tech leaves to obtain safety boots.

0915 Arcadis begins to sample well MDA-23P ~~at 11:00 am~~

Total depth = 14.93 ft. Depth to water = 8.77

Depth to water, from notch point on top of casing.

2" PVC wells.

Arcadis associates deploy 1/4 poly tubing to depth & midway through screened interval.

Duct tape used to hold, secure, tubing.

Poly hose then connected to Masterflex 1/5 sampling pump.

0937 Begin purging well. According to Arcadis assoc. 1 well vol = 1 gal.
Purged water collected in 5 gal. bucket.

0939 Picture #1 Sampling @ MDA-23P (West.)

| | | | |
|-------------------|------------|----------------|------------|
| 1st water quality | Ph: 11.2 | Turb: 82.0 | Temp: 22.9 |
| 1st gallon | Cond: 1.26 | Salinity: 0.05 | |

| | | | |
|-------------------------|-----------|------------|------------|
| 0943. 2nd water quality | Sal: 0.06 | Cond: 1.36 | Temp: 23.2 |
| 2nd gallon | Ph: 11.29 | Turb: 77 | |

| | | | |
|------------------------|----------------|------------|------------|
| 0948 3rd water quality | Salinity: 0.06 | Cond: 1.51 | Temp: 22.6 |
| 3rd gallon | Ph: 11.26 | Turb: 82.0 | |

Field parameters collected by Hadley Stamm using HORIBA U-10 Calibrated by Hadley Stamm prior to arriving onsite. Water collected/purged clear.

| | | | |
|----------------------|------------|----------------|------------|
| 0952 4th water qual. | Ph: 11.26 | Turb: 81.0 | Temp: 23.0 |
| 4th gallon | Cond: 1.53 | Salinity: 0.07 | |

0952 Collect 1st nonfiltered sample: 1L amber bottle. MDA-23P

Amber bottles - PCB's PAH

Plastic bottles - Metals.

1010 Collected filtered sample

1013 Finished collecting samples @ well MDA-23P

1025 Move to well MDA03P Total depth: 18.47 DTW: 14.0

AK5 042687

030 Kevin Patten lowers poly tubing to bottom of well then retrieves 5' ft to center hose @ 4' of screen interval. Let well stand for 30 min according to SOP.

037 Kevin decons interval submersible pump

044 Kevin and Hadley install submersible pump in well MDA035 Total depth 27.100
Static level 17.57

100 Arcadis begins purging well MDA03P

Well vol. = 172 gal.

| MDA03P | PH | Temp | Salinity | Conductivity | Turb. | Time |
|------------|-------|------|----------|--------------|-------|------|
| well vol 1 | 12.23 | 20.8 | 0.18 | 3.67 | 82 | 1110 |
| well vol 2 | 12.13 | 20.4 | 0.20 | 3.95 | 82 | 1113 |
| well vol 3 | | | | | | |
| well vol 4 | | | | | | |

Arcadis noticed that tube was suspended above water level.

18.46 - 5.00 = 13.46 ; 1.46 ft above water.

Arcadis assoc. lowers the tube 1 ft to 14.46 ft.

1113 Pumped dry @ sample zone. MDA03P

1125 Arcadis begins to purge MDA03S Well vol = 1.52 gallons

Approx 1 gal purged then dry @ sample interval.

1130 Arcadis assoc lower pump ~ 2 ft into well MDA03S. Now @ 25.10 ft

| MDA03S | PH | Temp | Salin. | Conductivity | Turb. | Time |
|---------------|------|------|--------|--------------|-------|------|
| 1st Well Vol. | 9.65 | 20.0 | 0.03 | .993 | 6 | 1132 |
| 2nd Well Vol. | 8.90 | 20.0 | 0.04 | .999 | 83 | 1135 |

1135 MDA03S dry @ sample interval

1137 Hadley recalibrates HORIBA in response to 6 reading @

1st well vol for MDA03S.

| | | | |
|------------|------|-----------|------|
| Initial PH | 4.16 | After PH | 4.00 |
| " Cond | 4.45 | Cal. Cond | 4.50 |
| " Turb | 72 | Turb. | 0.00 |
| " Temp | 27.4 | Temp | 27.4 |
| " Sal | 0.23 | Sal. | 0.23 |

1145 Kevin of Arcadis calls Dave Vicarel to determine procedure w/ dry wells and low recovery.

Continued on Page _____

Read and Understood By _____

AK5 042688

Date _____

Signed _____

Date _____

105 Arcadis leaves tubing in MDAO3P and will collect sample later in the day.

345 Move to well location MDAO1S / MDAO1P

MDAO1S T.D 28.28 DTW 12.16

MDAO1P T.D 18.42 DTW 16.74

1.29 total purge (Well vol = 3 gal)

Arcadis lowers 1/4 poly tubing to bottom of MDAO1P then retrieve 1st of hose.

1353 Arcadis lowers 1/4 poly tubing into MDAO1S - 23.28 ft

1420 Arcadis begins pumping MDAO3P w/ peristaltic pump

| Well vol. | MDAO1P | Turb. | Temp. | Cond. | Ph | Sal. | Time |
|-----------|--------------|-------|-------|-------|------|------|------|
| 1st vol | not working | -10 | 22.3 | 2.63 | 6.83 | .11 | 1422 |
| 2nd vol | questionable | 15 | 22.3 | 2.56 | 7.14 | .12 | 1425 |
| 3rd vol | | 15 | 22.3 | 2.60 | 7.13 | .12 | 1428 |
| 4th vol | | 0 | 22.3 | 2.60 | 7.14 | .12 | 1431 |

1432 Arcadis begins sampling, collecting in 1L amber.

1438 Only able to collect .5 l before sample interval goes dry.

1445 Arcadis attempt to finish sampling @ MDAO1P

1450 Arcadis finishes 1st amber and fills .5 of next amber, well zone dry.

1500 Arcadis attempts to finish filling 2nd amber, only able to fill 3/4 of the jar.

1510 Arcadis moves to MDAO1S, realize tubing was only sent down x 10 ft, reset tubing

1532 Move to well MDAO3S

took set of parameters Turb (0) Temp 20.0 Cond. 9.98 Salinity Ph. 0.04 9.10

Arcadis able to collect 4-1L samples.

1550 Arcadis attempts to collect 5th 1.2 sample to complete set @ MDAO3S able to collect final 1L sample.

1555 Arcadis removes pump from well MDAO3S - decans w/ DI water in 5 gal bucket.

1605 Tetra tech signs out @ OMS trailer

AK5 042689

Continued on Page

Read and Understood By

8/7/01

Larry H. Ferguson

3/01 Temp: 75° Thick fog.

0615 Tetra Tech, Gary Musgrave, arrives @ OMS site.

0645 Arcadis associates Kevin Patten and Hadley Stamm arrive onsite.

0650 Sign in @ OMS trailer.

0657 According to Hadley Stamm, filters used while collecting samples do not require an acid rinse.

~~0710~~ Arcadis collects rinse blank using peristaltic pump.
RB-01-8-08-01 Time 0705.

0725 Arcadis brought a different Turbidity meter
in response to yesterday's erratic readings.

HF Scientific DRT-CE

Hadley Stamm calibrates the HORIBA water meter.

Kevin Patten begins sampling @ well MDA03P

0733 1st attempt w/ Peristaltic pump - sample interval dry.
Lower tube 1st deeper into the well.

0738 Ph. 12.39 Cond. 4.12 Temp. 20.0 Salinity .21 Turb. 50.1

0755 Arcadis collects samples @ MDA03P

Sample location @ 17ft. Static - 14.5.

0810 move to Well MDA01P Sample time: 0820

Initial reading ~~temp 20.0 Salinity .12~~ Turb. n/a (well dry)

0820 Arcadis only Cond. 2.58 Temp. 21.7 Ph. - 7.61

able to collect 1.5 L @ sample interval

thus move hose 1st deeper into the well.

0835 Arcadis able to collect sample @ lower depth. MDA01P.

Sample depth = 18' according to Kevin. Turb. 12.10

0838 Horiba recalibrated by Hadley Stamm & Arcadis

PH. 4.30

Cond. 4.46

Turb. —

temp 26.4

Salinity 0.23

PH 4.02

Cond. 4.49

Turb. —

temp 26.2

Salinity 0.23

0845 move to MDA01S well.

0850 Deploy pump into MDA01S. Wait 30 min. according to S&P.

0900 Arcadis measures DTW @ well GM45 DTW 16.61 TD 23.95

0915 Arcadis assoc. Jason's water level probe w/ Alconex 4 water solution.

lm

AK5 042690

photo #2 @ MDA OIS (South) Kevin Patten and Hadley Stamm
 of Arcadis Deploying Low Flow
 interval pump.

0925 Well vol @ MDA OIS 258 interval pump.
 Purging @ a rate of 500ml/20 sec. Begin Purging
 Well vol. / (3min/2sec)

| MDA OIS | Time | Turb | Ph | Temp | Salinity | Cond. |
|---------------|------|------|------|------|----------|-------|
| 1st well vol. | 0932 | 2.27 | 9.99 | 18.4 | 0.03 | .783 |
| 2nd well vol. | 0935 | 1.37 | 9.97 | 17.9 | 0.03 | .788 |
| 3rd " | 0939 | .64 | 9.74 | 17.7 | 0.02 | .730 |
| 4th " | 0942 | .05 | 9.65 | 18.1 | 0.03 | .691 |

Cannot zero meter. Turbidity - 2.27 actual reading
 Cannot zero below .11

Samples exhibit slight sulfur odor.

0942 Stop purging.

0955 Arcadis begins collecting samples @ MDA OIS

1005 Arcadis able to collect 1st sample set. Will let well
 recharge and then collect duplicate sample.

1010 Arcadis associates begin collecting duplicate sample.

1021 Finished collecting duplicate sample @ MDA OIS

Sample labeled MDA OIS-DUPE.

1030 Arcadis begins decommissioning sampling pump.

- Rinse and activate pump in bucket of DI water for 3 minutes.

- Wash w/ methanol equiv. bottles

- 3-rinse sprays

1150 Arcadis pumps purge water from 55 gal. drum in van
 to drum located near purification system.

1205 Arcadis moves to well GM45 well location. Deploys 1/4 hose 5ft from
 bottom of well ≈ 18.85 ft

1210 Begin purging well, Unable to draw water from well w/ Peri pump

1220 Dave Vicarel and Gary Saegert arrive onsite.

1230 Unable to purge well w/ Peri pump.

1235 Attempt to remove PVC cap from well unsuccessful. Arcadis
 will pick up tools tomorrow AM to remove cap. PVC cap has numerous
 holes drilled enabling tubing to pass through but not big
 enough for interval pump.

- 40 Move to location 265 well. Open well cap and let stand 10 min.
150 DTW 6.63 ft. TD. 18.15 2" PVC well Well vol. 1.84 gal.
254 Arcadis lowers 1/4 poly tubing $\pm 13'$ into well casing.
25 Arcadis begins purging well (265) 4 water vol./ 7.4 gal
32 Arcadis fixes per pump, begins purging.

| | Time | pH | Cond. | Turb | Temp | Salinity |
|-------------------|------|-------|-------|------|------|----------|
| 1st well interval | 1338 | 12.53 | 8.10 | — | 24.3 | 0.44 |
| 2nd | 1347 | 12.52 | 7.98 | — | 24.7 | 0.44 |
| 3rd | 1357 | 12.54 | 8.05 | — | 24.6 | 0.44 |
| 4th | 1404 | 12.55 | 8.11 | — | 24.5 | 0.44 |

Not able to get turbidity readings from either meters.

- 1409 Arcadis assoc begin collecting samples @ 265
1424 Photo 3 filtered sample being collected @ 265 well location.
1427 Arcadis finished collecting sample @ 265
1435 Arcadis discons HORIBA equip and places purged water into 55 gal staging drum in rear of vehicle.
Call Eric Motion (Chicago TTEM) discussed progress and tomorrow's plans.
1445 Discussed concerns w/ Gary Seigen of OEPA.
- Turbidity is necessary
- Sampling procedures look adequate.
- Not necessary to return 8-9 for oversight.
- He would discuss the previous samples w/ EPA to determine validity w/o proper turbidity readings.
1500 Tetra Tech leaves OMS facility.
1530 Tetra Tech leaves Boat rental facility.

8/9/01 Hazy, overcast, slight fog mid 80's temp.

0650 Tetra Tech, Gary Musgrave, arrives @ OMS site.

0655 Tetra Tech signs in @ OMS Trailer.

0705 Arcadis associates Hadley Stamm and Kevin Patten arrive on site.

Initial briefing w/ Hadley -

- Hazco supplied arcadis w/ a new Horiba water monitor the prior evening. The new meter is model U-22. The previous meter was model U-16.
- Hazco also supplied calibrated the meter w/ Arcadis associates observing.
- Well 265 from the previous days sampling is designated MDA265.
- Tetra Tech informed Arcadis associates that w/o turbidity measurements a well should not be sampled.

0710 Arcadis associates deploy 1/4 tubing into well GM455

0735 Arcadis sets peristaltic pump @ GM455. Initial test indicates pump will work.

DTW - 16.61 T.D. - 23.85 Well Vol. 1.16 gal.

0745 Arcadis begins purging GM455. Flow rate: 300ml/50sec.

| GM455 | Time | Color | Turb. | Cond. | Sal. | Ph. | Temp. | Total dis. Vol. |
|---------------|------|-------|-------|-------|------|------|-------|-----------------|
| 1st Well Vol. | 0752 | clr. | 62.9 | 2.39 | .12 | 6.78 | 15.7 | 1.69/L |
| 2nd | 0757 | clr. | 6.8 | 2.64 | .13 | 7.01 | 14.9 | 1.7 |
| 3rd | 0805 | clr. | 6.1 | 2.50 | .13 | 7.05 | 15.0 | 1.7 |
| 4th | 0813 | clr. | 9.8 | 2.54 | .13 | 7.21 | 14.9 | 1.7 |

0800 Tetra Tech suggested that the HORIBA probe be rinsed between readings/well volumes. Prior, no decan occurred btwn samples @ each well vol.

0820 Arcadis begins collecting samples @ GM455.

0838 Finished collecting samples @ GM455

0854 Move to well GM46SR, remove cap and let stand 10 min.

MDA-275 → DTW 13.97 TD 27.5 Well Vol = 2.10 gallon purge 8.4 gallons.

0912 Deploy pump into well MDA 275. Wait 30 min.
Pump set @ 22.5 ft

GM46SR → DTW - 13.93 TD 28.54 Well vol. 2.34 gal. Purge 9.30

920 Photo 4 West Wells GM46SR/MDA27S GM46SR in back
MDA27S w/ hose & pump inserted.

- According to Kevin, he spoke w/ Dave Viceral and explained that the turbidity was to determine if ~~total~~^{dissolved} metals analysis would be performed. If the turbidity is > 5 analysis were to be performed on the filtered samples

930 Left Message w/ Eric Morton (Jt) concerning progress.

~~930~~

934 Begin purging MDA27S well @ a rate of 300ml/27 sec.
Water clear, no odor.

| MDA27S | Time | Cond | pH | Temp | Turbidity | Sal | TDS |
|--------------|------|------|-------|------|-----------|-----|-----|
| 1st Well Vol | 0940 | 4.96 | 12.25 | 21.3 | 38.7 | .27 | 3.2 |
| - 2nd | | 5.48 | 12.29 | 20.9 | 14.1 | .29 | 3.4 |

0915 Spoke w/ Eric Morton regarding turbidity.

- Humidity & heat may be affecting measurements/probe.
- He will call Gary Cogen regarding Turbidity.
- Expressed that Dave Vicary's ~~would~~ ideas regarding turbidity.

phone call.

1010 Finished collecting sample @ MDA27S

1015 Arcadis assoc's Jicon pump and Horiba before moving to GM46SR well.

1020 Deploy pump and hose into ~~MDA~~ GM46SR well

1055 Begin purging GM46SR well 300ml/12 sec

Clear water/no odor

| GM46SR | 1st Well Vol | Time | Temp | Cond | Sal | Turb. | pH | TDS |
|--------|--------------|------|------|------|------|-------|-------|-----|
| | 2nd | 1102 | 22.2 | 5.78 | 0.31 | 6.9 | 12.28 | 3.7 |
| | 3rd | 1105 | 20.7 | 5.90 | 0.31 | 3.6 | 12.33 | 3.7 |
| | 4th | 1108 | 20.9 | 5.94 | 0.31 | 3.9 | 12.29 | 3.7 |
| | | 1110 | 20.6 | 5.96 | 0.31 | 4.0 | 12.31 | 3.7 |
| | | | 21.7 | 5.44 | .129 | 7.1 | 12.26 | 3.5 |
| | | | 21.8 | 5.65 | .130 | 6.0 | 12.26 | 3.5 |

Finished purging MDA27S

1111 Begin collecting sample @ GM46SR well

1118 Finish collecting GM46SR sample

1122 Arcadis assoc's Jicon pump & sampling materials

1340 Arcadis empties staged purge water into 55 gallon drums

Continued on Page

Read and Understood By

km

1358 Move to MDA08P/MDA08S well location - open well caps 10 sec + 10 min
 MDA08P TO 20.96 DTW 13.47 Well Vol. 1.2 gal. 5 gal pumped.
 MDA08S TO 20.52 DTW 22.54 Well Vol. .95 gal 4 gal pumped

Sampling containers 2 x 1L amber - PCBs, PAH. 8082 8276
 1 x 1L plastic - Total metals 6010
 1 x 1L plastic - Dissolved metals 6010

1413 Install 1/4" tubing into MDA08P well 16" from top of casing
 1425 Deploy pump into MDA08S well. Set pump @ 26.5 ft from top of casing.
 1446 Begin purging MDA08P Strong odor noticed during purging. 300 ml / 42 sec.
 Slight yellow tint/color.

| MDA08P | Time | Cond. | Turb. | Temp. | Salin. | Ph | TDS. |
|---------------|------|-------|-------|-------|--------|------|------|
| 1st well vol. | 1453 | 0.621 | 19.8 | 21.0 | .03 | 9.73 | .42 |
| 2nd | 1501 | 0.627 | 15.5 | 21.0 | .03 | 9.88 | .41 |
| 3rd | 1509 | 0.654 | 16.9 | 20.7 | .03 | 9.91 | .42 |
| 4th | 1516 | 0.660 | 16.2 | 21.1 | .03 | 9.96 | .42 |

1520 Begin collecting samples @ MDA08P.
 1536 Finished collecting @ MDA08P
 1545 Tetra Tech off sight

Handwritten signature
 8/2/01

AK Steel, Inc.
Middletown, OH Site Visit
September 10, 2001

Attendees:

David Vicarel, Arcadis G&M
John McGuinness, OEPA, SWDO
Nita Nordstrom, OEPA, SWDO
Mike Mikulka, USEPA
Gary Cygan, USEPA

Purpose:

Meeting to 1) review monitoring well and boring locations one week prior to installation; 2) review well point locations in Dicks Creek and construction details; 3) review damage and releases to Dicks Creek stemming from failed attempt to install well points.

Updates:

The new well point construction techniques appear to be more-in-line to traditional well point construction than previous designs, which were not submitted for approval. Cygan must email a well point supplier to Vicarel so that the 3 foot screen used in the well points being installed may be calibrated to a single dedicated well point which Cygan was more familiar with.

We reviewed the aborted well point installation area adjacent to Dicks Creek and realized the extent of damage. The trenching appears to extent at least 40 to 50 feet back, perpendicular to the creek. A oil slick dam was still in place at the interface between the filled in trench and creek.

We visited numerous monitoring well and soil boring locations to determine the best locations for the upcoming installation due to start later this week. We moved various locations around to insure the intent of the boring will be followed.

Mikulka documented a fuel/diesel? spill at a location on the OMS property we were walking. Pictures were taken and the OMS official in charge was notified.

Cygan and Mikulka will have a conference call with OEPA ecologist/toxicologist re the Dr. Burton (WSU) response to Arcadis's review of the WSU eco-risk assessment. We will also be considering a further investigation of the floodplain contamination in light of the recent events at Dicks Creek. We will defer a decision on this until after OEPA's analyses are completed.



Institute for Environmental Quality
064 Brehm Lab
3640 Colonel Glenn Hwy.
Dayton, OH 45435-0001
(937) 775-2201
(FAX (937) 775-4997
email: ieqstaff@wright.edu

Date: August 22, 2001

To: Eric Morton, Project Manager

From: Allen Burton

Re: Response to ARCADIS Letter of July 5, 2001 on Wright State University
Data

We have reviewed the letter from Dr. Barber and are pleased to offer the following responses (below). The overall language in the letter of July 5, 2001 suggests ARCADIS is not aware of the purpose of the Wright State University (WSU) study as it relates to study design, data collection procedures and its subsequent use in the Ecological Risk Assessment (ERA) of Dicks Creek. The WSU study was a competitive research grant awarded by the U.S. Environmental Protection Agency (USEPA) Office of Research and Development's STAR (Science to Achieve Results) Program. This grant, entitled "Sediment Contamination Methods: Validation of Standardized and Novel Approaches" (EPA Grant Number R826200) was awarded to Drs. Burton, Krane and Tiernan (WSU), Landrum (NOAA), Stubblefield (ENSR Consulting & Engineering), and Clements (Colorado State University) for the period of December 1, 1997 – November 30, 2000. Prior and during the grant award, WSU also conducted unsponsored research for three Master of Science thesis projects that focused on developing *in situ* methods for determining bioaccumulation and toxicity of chemical stressors in aquatic invertebrates.

The objectives of the STAR project were to: (1) determine whether freshwater sediment criteria and standard USEPA acute and chronic toxicity and bioaccumulation tests are appropriate indicators of ecological risk, and (2) develop an effective approach to evaluate sediment contamination which includes: (a) an *in situ* component for sampling and testing to reduce uncertainty in determinations of risk, and (b) appropriate models for predicting sediment quality criteria. Field sites for this project included 3 sites: the Clark Fork River in Butte, Montana; the Little Scioto River in Marion, Ohio; and Dicks Creek. The STAR program is a highly competitive, peer-reviewed process, only funding ~ 5 – 10% of submitted proposals. Proposals require a quality assurance/quality control plan. None of the data collected by WSU and used in the ERA were collected for purposes of conducting an ERA or for litigation purposes. Since it was a research project, test methods and sampling sites varied through the project as the methods were optimized and additional data was analyzed. When the USEPA requested to use WSU data as part of an ERA, chain-of-custody (COC) forms were added to the STAR project QA/QC procedures, affecting the final field season in year 2000. However, there was no reason to use COC forms prior. Extensive QC documentation was not possible for the research project due to the limited budget available for chemical analyses.

The goal of the STAR grant is to further the science. To meet this goal the results of the WSU research have been presented to the scientific community via presentations at regional to international scientific conferences, and as published abstracts, posters, technical reports and

AK5 042607

manuscripts in the peer-reviewed literature during the past 3 years. This has allowed for a significant degree of peer review and discussion with other scientists in this field. Indeed, the response to the WSU research has been extremely positive, with several recent invited presentations at USEPA, national and international conferences, requests to conduct similar procedures at other USEPA Superfund sites, and requests for short-course training at national meetings. Finally, the American Society for Testing and Materials, and the USEPA have requested that WSU develop standardized guidance for the WSU *in situ* methods based on the useful results of this STAR project.

Specific responses to each ARCADIS question are provided below. If you have any further questions do not hesitate to ask.

Sincerely,

G. Allen Burton, Jr., Ph.D.
Brage Golding Distinguished Professor of Research and Director

Attachments:

WSU database (electronic)

New data (received after ERA completed)

QA Program documentation for analytical labs

AK5 042608

Copy of ARCADIS letter with Responses Added

Subject: AK Steel Corporation, Middletown Works
RCRA 7003 Order, Docket Number R7003-5-00-002
Wright State University Data for Dick's Creek, Ohio

5 July 2001

ARCADIS Project No.: M1000848.0001

Contact:

Dear Mr. Cygan:

AK Steel and ARCADIS G&M first became aware that Allen Burton at Wright State Extension: University (WSU) was conducting research in Dick's Creek following a presentation 11 of preliminary results at the 1999 meeting of the Society for Environmental Toxicology and Chemistry (SET AC). When contacted, Dr. Burton declined to make additional information available regarding his study or its results. The U.S. Environmental Protection Agency (USEPA) later referenced WSU data in the subject order, dated August 17, 2000. AK Steel then requested the data from USEPA. USEPA responded on September 22, 2000 with a largely qualitative package that included a copy of the SETAC presentation but did not include a useable data set. ARCADIS G&M again requested data and supporting documentation in an email to Gary Cygan dated March 20, 2001. Subsequently, in its comments on Revision 1 of the Human Health and Ecological Risk Assessment Work Plan (undated, received in April 2001), USEPA requested that AK Steel incorporate the WSU data in the risk assessments for the site. After additional requests by AK Steel, USEPA provided an Excel spreadsheet on May 8, 2001. However, it was not possible to interpret or even understand the data based on the information contained in the spreadsheet. AK Steel submitted a letter request for supporting information, and USEPA responded with a package of limited supporting documentation on May 25, 2001.

ARCADIS G&M has reviewed the WSU data spreadsheet and supporting documentation. After this review, we have serious reservations about the quality and usability of the data. It is clear that these data were not collected under the strict quality assurance/quality control (QA/QC) procedures expected of AK Steel. A list of questions and requests for additional information is provided below. AK Steel cannot use the data without the requested information. Please respond to each point to facilitate the review and interpretation of the WSU data.

1. The Dick's Creek sample location map indicates that samples were collected at Outfall 003, Outfall 002, and the confluence of Monroe Ditch and Dick's Creek. No WSU data were included for these locations. These locations are relevant to the risk assessments for the site, and any data collected there must be provided.

Response: These sites were only sampled during 1997-1999 as part of WSU research described above. These data were not included in the ERA as they were deemed too old

2. The supporting documentation indicates that extensive *in situ* and laboratory toxicity testing has been conducted at the site. If the USEPA considers the toxicity test results valid and intends for us to use them, it must provide the data. Supporting documentation and water quality data (dissolved oxygen, ammonia, etc.) must also be provided.

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Response: Survival and water quality data are tabularized and are part of the EPA ORD database. The ERA (Chp. 4, pp. 35-38) provides a summary only of the trends of laboratory and field results from studies conducted at Dicks Creek during the 1998-2000 field seasons. Therefore, not all raw data for all tests were provided in this document. Tissue, sediment and water chemical results used in the ERA were the only data provided in their entirety.

3. Tissue data from the August 2000 sampling event were not provided. The WSU data file states "as of 10/9/2000 the tissue samples from 8/18/00 have not been received from the chemists." The WSU data compilation was provided to us well after October 2000 (7 months later), and the tissue data are most likely available and must be provided.

Response: Some data were received after the ERA was completed. They have been provided (attachment). It is interesting to note that these data support the ERA conclusions and, in addition, document tissue contamination of exposed amphipods. This note appears on Tab R of the ERA database. Data have been received from the chemistry lab and is provided in the "Dicks new ERA data" file (this is a separate data base).

4. The supporting documentation contains conflicting statements regarding *in situ* exposure durations. Page C-4 lists the exposure duration for the invertebrates *Chironomus tentans*, *Hyalella azteca*, and *Lumbriculus variegatus* as "5-10d," whereas page C-5 states that "after 48h, 1 wk, 2 wk, 3 wk and 4 wks of exposure, four replicates were gently removed from the stream bed." Exposure durations must be provided on a sample-by-sample basis. This information is critical for inclusion of tissue data in the risk assessment for aquatic-feeding wildlife.

Response: The statements are not conflicting, rather show that exposure periods varied depending on the research experiments. Five – ten day exposures were used in the EPA ORD study, 48 hr to 4 week exposures were used in a MS thesis project. In 1998, *in situ* exposures were 7d for all organisms: *H. azteca*, *C. tentans*, *D. magna*, *P. promelas* and *L. variegatus*. 1999 and 2000 *in situ* exposures were 3d for *P. promelas* and *D. magna* and 4d for *H. azteca*, *C. tentans*, and *L. variegatus*.

5. The WSU data compilation includes no fish tissue analytical results (excepting one control fish sample analyzed for lipids). WSU has apparently prepared an ecological risk assessment for Dick's Creek, but it is difficult to understand how an appropriate site-specific assessment could be conducted for piscivorous wildlife without measurements of PCBs in whole-body fish tissue. The USEPA must confirm whether it has sponsored any analyses of whole-body fish tissue and provide any missing data.

Response: WSU did not collect fish tissue from Dicks Creek; therefore, fish tissue data provided by Ohio EPA were used in the risk assessment. These data values can be found in Table 13 and Appendix A4, "Exposure Characterization Calculations: Omnivorous fish, of the ERA. No fish lipid values were provided by OEPA, therefore, these values were taken from the literature as cited in the ERA.

6. The supporting documentation provided by USEPA refers to a Quality Assurance Project Plan (QAPP) for the US Environmental Protection Agency's Freshwater Sediment

Toxicity Methods Evaluation (Burton, 1997). We have previously requested the QAPP for WSU's work at the Dick's Creek site. The USEPA must provide this document.

Response: QAPP provided (attachment)

7. Analytical methods are not provided for all analyses but are presumably included in the WSU QAPP and the analytical laboratory reports.

Response: Water, sediment and tissue chemical analysis methods conducted by the Dr. Tiernan's laboratory at WSU are summarized in Appendix F "Chemical Analyses" of the ERA. Dr. Tiernan's laboratory has an international reputation as one of the top facilities in the world for trace level analyses of chlorinated hydrocarbons in complex matrices. They helped develop methods for the USEPA and had a lead role in the USEPA National Dioxin Study. During the past couple years they have had a multi-million dollar contract with the State of New York and undergone extensive audits for QA/QC. As discussed above, due to the limited budget of this project, the analytical labs did not provide extensive QA/QC documentation.

8. Copies of the chain of custody forms were provided for only some of the analyses reported in the WSU data compilation. The remaining chain of custody forms must be provided.

Response: As discussed above, the research nature of the WSU studies did not dictate need for COCs; however they were used in 2000 (excluding a Ph.D. research project on groundwater-surface water interactions). At this time, we do not know what COCs have been provided to ARCADIS. A list of missing COCs from 2000 samples is needed in order to provide them to ARCADIS.

9. The chain of custody form for two "background" samples collected on 9/6/00 contains the note: "Steve Weil knows these samples are to arrive to replace the two that were contaminated with Durban." WSU must clarify how the samples were contaminated, as well as indicating whether "Durban" is a typographical error.

Response: The confluence water sample, collected 8/18/00 did contain Dursban. Since this was an unexpected result, the sample was collected again at the same site and reanalyzed for HIF. This second sample again contained traces of Dursban. Standard QA/QC lab blanks or other samples run concurrently with the Dicks Creek confluence sample did not contain Dursban.

10. A chain of custody form for three porewater samples includes a sample collection date of 8/17/00 and "spin" dates (8/23/00 through 8/31/00). WSU must describe how these porewater samples were collected.

Response: Porewaters were collected according to ASTM, 1994 and Environment Canada, 1994a guidelines. Centrifugation of homogenized sediments at 10,000 g for 30 min.

11. The dates of analysis must be reported, to allow determination of whether recommended holding times were exceeded. The chain of custody forms indicate that water samples were provided to the analytical laboratories as many as ten days after sample collection.

Response: This information may be available if a list of specific samples in question is provided. Note that exceeding water holding times will not increase PCB, PAH or metal concentrations; rather will decrease them.

12. The USEPA has not provided quality control data from the analytical laboratories, even though the laboratories provided letters stating that this information is available. These data must be provided.

Response: Dr. Tiernan's laboratory (WSU) provided the information required to calculate detection limits for the most of the data analyzed by their laboratory. Additionally, laboratory control standards (Tiernan lab), lab blanks (Tiernan lab) and animal tissue tank blanks (Burton lab) were completed and are available. Tank blank data have been incorporated into the database, however, not all laboratory control standards and lab blanks have been incorporated and are located with the raw data in laboratory reports provided by the Tiernan lab. See also above related responses.

13. The USEPA has not provided copies of the analytical laboratory data reports. Relevant information from these reports (e.g., qualifiers, reporting limits, instrument detection limits) is generally not included in the WSU data compilation. The laboratory data reports must be provided. Also, WSU must indicate whether the data entry has been checked against the laboratory reports.

Response: See above related responses, regarding research vs. litigation objectives. Data qualifiers and reporting limits are not available. The data have been spot checked against the original laboratory reports.

14. The WSU data was not provided in database format, and conversion to database format will be cumbersome. Many laboratories provide electronic data deliverables in database format. If such electronic files are available from either WSU or the analytical laboratories, they must be provided.

Response: The WSU database provided to TetraTech for the ERA is in electronic format (Microsoft Excel).

15. The WSU data compilation uses inconsistent and sometimes obscure nomenclature for sample locations. This will unnecessarily complicate data management.

Response: As discussed above, these data were from research projects where the study design differed.

16. In the WSU data file, non-detect values are set to zero or left blank, and sample-specific reporting limits and instrument detection limits area not provided for most analytes. The USEPA has required that a non-zero surrogate value be substituted for non-detects for use in our risk assessments. Also, the practice of leaving non-detect cells blank makes it difficult to distinguish whether a constituent was not detected or was not analyzed. For example, it is not possible to determine whether the same suite of PCB congeners was included in all PCB analyses. This information should be included in the laboratory reports, which must be provided (as stated previously).

Response: WSU reported the data in the ERA database as they appeared on the original data reports provided by the analytical laboratory. On the electronic format of the database all non-detect values were flagged by a red comment flag and are noted as "ND" in the comment box. These flags may or may not appear on hard copies of the data. If values were reported by the lab were zero, they were entered as zero in the database. Since this was a research project, WSU was not required to substitute a non-zero surrogate value for non-detects.

17. A different reference area was used for each year of the WSU study. A rationale must be provided for the switching of reference areas. Also, WSU must indicate why Little Sugar Creek is an appropriate reference area for Dick's Creek. Little Sugar Creek is relatively distant from Dick's Creek (though it is close to WSU). As such, local weather patterns that may affect in situ toxicity and bioaccumulation in Dick's Creek would not necessarily be reflected in the results for Little Sugar Creek.

Response: As state above this was a research project, where selecting the optimal reference site was part of the research. After much testing, an acceptable reference location was not located within the Dicks Creek watershed area. All locations tested (i.e. Elk Creek, confluence of North and main branch) had unacceptable water quality on occassion. Since a concurrent testing at reference location is required, Little Sugar Creek was evaluated as a reference site to satisfy protocol.

18. Four species (*Pimephales promelas*, *Daphnia magna*, *Corbicula fluminea*, and *Hexigenia limbata*) were not included in the tissue data set but are listed as toxicity test organisms in the supporting documentation. A chain of custody form indicates that *Corbicula* samples were submitted for analysis. WSU must clarify whether tissue analyses were ever conducted for these species and provide any missing data.

Response: *P. promelas*, *D. magna* and *H. limbata* were not analyzed due to insufficient tissue quantities. *C. fluminea* were not analyzed from MS thesis research due to budget constraints. Indigenous *Corbicula* tissue samples were submitted for analysis and results are available (attached data as: Burton WSU sample # 780, 781, 782, 783, 784, and CDC).

19. During the "1998" sediment sampling event (actually conducted in January, 1999), five sediment samples were collected at each sampling location. The WSU data file does not indicate any distinction between these samples. WSU must indicate whether the samples were collected as true replicates or are distinct in some way.

Response: The samples are distinct spatial samples collected in accordance with the EPA ORD study design for year one, to evaluate spatial toxicity. Individual sediment samples were labeled site sed-1, site sed-2..... site sed-5. Exact locations of sediment sample collection are noted in field notebooks and are within ~ 1 meter of each other.

20. Tissue samples for the October, 1998 sampling event were obtained from several *in situ* exposure methods. The exposure methods were inconsistent between the study area and reference locations, and between species. All locations and species included a water column (WC) exposure, and some locations and species included an "against sediment" (AS) exposure and a porewater chamber (PWC) exposure. No data are reported for the surficial sediment (SS) exposure described in the supporting documentation, although

this exposure method is most representative of actual benthic invertebrate exposures occurring in the field. These discrepancies hinder data interpretation and must be explained.

Response: Again, the methods were not "inconsistent" as they were designed to address specific research questions accurately. During the October, 1998 *in situ* sampling event, *C. tentans*, *H. azteca*, *P. promelas*, *D. magna* and *L. variegatus* were exposed to either water column only (no sediments or sediment contact), against sediments (in direct sediment contact across chamber mesh) and surficial sediment exposure (chamber ½ filled with sediment). Chambers were placed at the Amanda School site on Dicks Creek and at Elk Creek. All organisms and treatment exposures were the same at each site, no tissue sample data indicates complete mortality of organisms for the treatment at that site. There was complete mortality of all organisms in the surficial sediment treatment at the Amanda School site. Porewater tissue samples were from a M.S. research experiment, also conducted in October of 1998.

21. It appears that the "1998" sediment PCB results for the Amanda School sample location were mislabeled as "dicks/elk." WSU must confirm whether this interpretation is correct.

Response: The "species" name is correct for the Amanda site, however the "site" name "dicks/elk" was in error on the original spreadsheet. The site AMD SED is in fact Amamda School site sediment.

22. Total organic carbon (TOC) and dissolved organic carbon (DOC) were not reported for the "1998" and 1999 sampling events, although they were analyzed for the sampling events in 2000. WSU must confirm that TOC and DOC were not analyzed in the earlier sampling events. These parameters are critical for interpreting analytical results for PCBs and PAHs.

Response: TOC and DOC were not analyzed for during years 1998 and 1999.

23. The "Beaver Dam" location sampled in 1999 is shown on WSU's map but is not included in the verbal description of sample locations. This location must be described.

Response: "Beaver Dam" is located at Dicks Creek river mile 2.36, between the USGS gauging station site and the Amanda School site.

24. Polychlorinated biphenyl (PCB) and lipid data are provided for a tissue sample labeled "indigenous," collected from the North Branch/Dick's Creek confluence in 1999. The species of the sampled organism(s) must be provided.

Response: The indigenous sample was a collection of oligochaete worms from sediments in the confluence of the north and main branches of Dicks Creek.

25. The only other "indigenous" samples were reported for three unidentified locations sampled in 1999 (labeled as LSR/G.camp, LSR.P.Hill, and LSR/203). Only lipid data were reported for these samples. These sample locations must be identified and mapped, and the species must be identified. Also, it is unclear why samples would be collected and analyzed only for lipids. WSU must confirm whether PCB analyses were conducted for these samples and provide any missing data.

Response: These samples were collected from the Little Scioto River in Marion, Ohio so the results are irrelevant. As discussed above, the Little Scioto River is another site under the USEPA ORD grant, but should not have been included with this Dicks Creek database. The Dicks Creek data were extracted from a larger database that contained data from all three of the sites studied under the EPA ORD grant.

26. The WSU data compilation contains the note: "as of 101912000 the indigenous samples from 1018199 have not been received from the chemists." This note appears to apply only to PAH analytical results. The data compilation does not contain a note regarding PCB results for the three unidentified locations. WSU must state which "indigenous" tissue samples were supposed to be analyzed for PAHs and clarify the current status of the PAH data.

Response: Results from these tissue samples have been returned and are available in the "Dicks new ERA data" file (separate file). Samples were for PAHs and PCBs from the following:

780 – indigenous *Corbicula* Amanda School site, 8/00
 781 – indigenous *Corbicula*, USGS site, 8/00
 782 – indigenous *Corbicula*, Amanda School site, 10/99
 783 – indigenous *Corbicula*, Beaver dam site, 10/99
 784 – indigenous *Corbicula*, Caesar Creek site, 10/99
 CDC – indigenous *L. variegatus*, Dicks Confluence site 10/99
 YR-indig. – indigenous oligochaetes, Dicks landfill tributary 6/99

27. Tissue data for indigenous organisms are more relevant for wildlife risk assessment purposes than data from in situ or laboratory exposures. WSU must confirm whether all data for indigenous organisms have been provided.

Response: Those noted in 26 above are the only indigenous organisms collected at Dicks Creek by WSU for the EPA ORD grant. Indigenous *Lumbriculus* tissue from the landfill tributary (1998) was not included in the ERA database, although it was used in the WSU ERA. These data are now located in the "Dicks new ERA data" file)

28. Lipid concentrations were reported for *L. variegatus* tissue samples labeled as LSR/G.camp, LSR/P.Hill, and LSR/203. As stated previously, the locations for these samples must be properly identified. Also, the type of exposure must be indicated (e.g., in situ exposure method, laboratory test duration). Any PCB data or other analyses corresponding to these samples must be provided.

Response: See above response. These are Little Scioto River samples, therefore irrelevant.

29. Tissue data (PCBs and lipids in *L. variegatus*) were provided for four 28-day laboratory tests conducted in 1999. One test used sediment from the Amanda School location, and the other three used sediment from unidentified locations (labeled as Trout farm, 50trout/50flori, and LSR/ref). The latter samples must be properly identified. If one or more of these samples was used as a control, it must be identified as such.

AK5 042615

Response: These three sediments were laboratory controls used as reference samples. Trout Farm sediment is from a stream near WSU, 50 trout/50Flori is 50% Trout Farm sediment and 50% Flourisant soil and LSR is a reference site on the Little Scioto River.

30. Tissue concentrations of polycyclic aromatic hydrocarbons (PAHs) were provided for *L. variegatus* exposed *in situ* at two sample locations in 1999 (Beaver Dam and Caesar Creek). Although data were provided for WC, AS, and PWC exposures, no SS exposure was included. The SS exposure is the most representative of actual benthic invertebrate exposures in the field. WSU must confirm that PAHs in tissue were not measured for the SS exposure.

Response: PAHs were measured in *L. variegatus* samples exposed to WC, AS, and PWC exposures at Beaver dam and Caesar Creek only. They were not measured in SS samples at any of the *in situ* test sites during this exposure period due to budget limitations.

31. Tissue concentrations of PCBs and lipids were reported for a *H. azteca* water- only control for a 4-day laboratory test conducted in 1999. No other data were provided for *H. azteca* 4-day laboratory tests. All test data associated with the *H. azteca* control sample must be provided.

Response: *H. azteca* tissue samples were not analyzed from this experiment although survival was high enough to accommodate enough tissue mass for analysis; again due to budget limitations.

32. A tissue lipid concentration was reported with the 1999 data for an unspecified fathead minnow (*Pimephales promelas*) laboratory control sample. No other data were provided for fathead minnows. All fathead minnow data must be provided.

Response: Minnows were not analyzed due to budget limitations.

33. No PCB data are provided for the mini monitoring well (MW) sample collected from the USGS Gauging Station in June 2000. The data file contains the note: "where is this sample?" WSU must clarify the current status of the missing PCB data.

Response: This sample vial was broken and the contents lost prior to analysis (Tab I ERA database).

34. DOC data are reported for all water samples collected during the June 2000 sampling event, except the porewater samples collected using nested piezometers. WSU must confirm whether the piezometer samples were analyzed for DOC.

Response: No, piezometer porewater samples were not analyzed for DOC due to limited sample size.

35. The units must be provided for the depth of the piezometer samples.

Response: Piezometer sampling depths are in centimeters.

36. The DOC data reporting for the June 2000 sampling event is unclear, because both the surface water samples and the in situ chamber water samples for the WC exposure are labeled as "sw". A chain of custody form was not provided for these samples. It is possible that the June 28 samples were surface water, and the June 30 samples were from WC chambers. WSU must confirm whether this interpretation is correct.

Response: Yes, that is correct, the three "sw" samples collected on 6/30/00 are in fact WC samples from within the *in situ* chambers after exposure and not sw samples. The chain of custody forms for these samples are available. Note tab U of WSU ERA database.

37. It appears that sediment TOC results are mislabeled as DOC, for both the June and August 2000 sampling events. WSU must confirm whether this interpretation is correct.

Response: TOC and DOC do not appear to be mislabeled for either June or August 2000 (Tabs T and U of the WSU ERA database). Labels are correct as they appear.

38. The WSU analytical program should have included TOC as well as DOC for water samples. The DOC analysis does not include organic carbon present on particles, which are filtered out of the sample for DOC analysis but not PCB analysis. However, the partitioning of PCBs between the freely dissolved and organic carbon-complexed phases is determined by both particulate and dissolved organic carbon. Freely dissolved concentrations are the most relevant concentrations for predicting aquatic toxicity.

Response: TOC was not analyzed for on any water sample from Dicks Creek. This would have been useful data, but could not be collected due to budget limitations.

39. It appears that for the herbicide, insecticide, and fungicide results for Little Sugar Creek (June, 2000), the sediment samples are mislabeled as water. Also, it appears that for the same location and date, the fungicide surface water results are mislabeled as sediment. WSU must confirm whether this interpretation is correct.

Response: Brookside Laboratories mislabeled the matrices for herbicide and insecticide in their report. On Tabs W and X of the ERA database, sample 303-LSC-062800, Lab number WEO63006, should be replaced by: 307-LSC-022800. The sample is a sediment, not a water sample as recorded. Brookside did not report the correct matrix of the sample as noted on the WSU chain of custody form for these samples. The matrices on the fungicide tab Y are correct.

40. For the June 2000 sampling event, all samples that were analyzed for herbicides and insecticides were also analyzed for fungicides, except for surface water collected from the USGS Gauging Station. WSU must confirm whether this sample was analyzed for fungicides and provide any missing data.

Response: The surface water sample collected from the USGS gauging station during the 28 June, 2000 sample run was analyzed for fungicides and is listed in the WSU ERA database on Tab Y, sample number 313-US-062800, Lab number WEO630007.

41. Two sets of herbicide and insecticide results (all non-detect) are reported for surface water collected from the Amanda School location in June 2000. WSU must clarify the number of surface water samples analyzed.

Response: There was only one surface water sample from the Amanda School site collected 28 June 2000 that was analyzed for HIF. This was a duplication error, as entered. This is obvious as the sample number, lab number and data are identical. This duplication error was on the herbicide tab only. See ERA database Tabs W, X and Y.

42. For the June 2000 sampling event, tissue data are provided for *c. tendons* and *L. variegatus* "control tissue" samples. WSU must clarify how controls were designed for *in situ* tests.

Response: These tissues were laboratory blanks taken from the same in-house cultures as organisms used for *in situ* toxicity testing. These tissues provided background tissue levels of contaminants analyzed for.

43. Data for blank samples are provided for the June 2000 sampling event (three blanks) and the August 2000 sampling event (two blanks). WSU must identify the blank type(s) (e.g., matrix, collection method) and the data to which the blanks were intended to apply.

Response: These were method blanks intended to accompany the data they are reported with. If the blank is grouped with sediments, then it is a sediment blank. Sediment and water samples are matrix blanks and tissue blanks are method blanks that are extracted and treated as a regular sample without the actual test material incorporated.

44. For the August 2000 sampling event, TOC data are provided for sediment collected from two Dick's Creek locations and Little Sugar Creek. No TOC data are provided for "background" sediment samples from the North Branch of Dick's Creek confluence or Monroe Ditch at Todd Hunter Road. WSU must confirm whether TOC was analyzed for these samples.

Response: Data are available for Todhunter Road and Confluence sites. WSU requested TOC analysis for these sediment samples, however, the samples were analyzed by ASTM method D2974 for total carbon (TC) as opposed to the requested total organic carbon. These data do not appear in the database as results were obtained after its release.

Additional Response to Question nos. 3, 18, 26 and 27: Data that arrived after the ERA was submitted are in *Dicks new ERA database* (MS Excel file). A review of the new tissue data (from August 2000 sampling) show PCB and PAH residues within the same range as the June 2000 data. Indigenous organism tissue residues were all within the model predictions for benthic species. Therefore, the conclusions of the ERA do not change and are further supported.

Finally, we restate our request for any and all data collected from Dick's Creek, its tributaries, and any reference areas, as well as any supporting documentation. This request includes but is not limited to the specific requests listed above.

Response: All data has been provided.

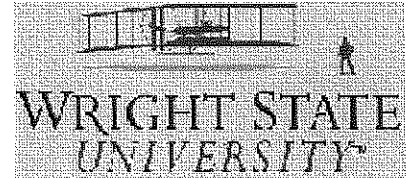
If you have any questions or require additional information, please contact me.

Sincerely,

Timothy R. Barber, Ph.D. Project Manager

DRAFT

AK5 042619



064 Brehm Lab

3640 Colonel Glenn Hwy.
Dayton, OH 45435-0001
(937) 775-2201
(FAX (937) 775-4997
email: icqstaff@wright.edu

Date: August 22, 2001

To: Eric Morton, Project Manager

From: Allen Burton

Re: Response to ARCADIS Letter of July 5, 2001 on Wright State University Data

We have reviewed the letter from Dr. Barber and are pleased to offer the following responses (below). The overall language in the letter of July 5, 2001 suggests ARCADIS is not aware of the purpose of the Wright State University (WSU) study as it relates to study design, data collection procedures and its subsequent use in the Ecological Risk Assessment (ERA) of Dicks Creek. The WSU study was a competitive research grant awarded by the U.S. Environmental Protection Agency (USEPA) Office of Research and Development's STAR (Science to Achieve Results) Program (attachment). This grant, entitled "Sediment Contamination Methods: Validation of Standardized and Novel Approaches" (EPA Grant Number R826200) was awarded to Drs. Burton, Krane and Tiernan (WSU), Landrum (NOAA), Stubblefield (ENSR Consulting & Engineering), and Clements (Colorado State University) for the period of December 1, 1997 – November 30, 2000. Prior and during the grant award, WSU also conducted unsponsored research for three Master of Science thesis projects that focused on developing *in situ* methods for determining bioaccumulation and toxicity of chemical stressors in aquatic invertebrates.

The objectives of the STAR project were to: (1) determine whether freshwater sediment criteria and standard USEPA acute and chronic toxicity and bioaccumulation tests are appropriate indicators of ecological risk, and (2) develop an effective approach to evaluate sediment contamination which includes: (a) an *in situ* component for sampling and testing to reduce uncertainty in determinations of risk, and (b) appropriate models for predicting sediment quality criteria. Field sites for this project included 3 sites: the Clark Fork River in Butte, Montana; the Little Scioto River in Marion, Ohio; and Dicks Creek. The STAR program is a highly competitive, peer-reviewed process, only funding ~ 5 – 10% of submitted proposals. Proposals

AK5 042696

require a quality assurance/quality control plan. None of the data collected by WSU and used in the ERA were collected for purposes of conducting an ERA or for litigation purposes. Since it was a research project, test methods and sampling sites varied through the project as the methods were optimized and additional data was analyzed. When the USEPA requested to use WSU data as part of an ERA, chain-of-custody (COC) forms were added to the STAR project QA/QC procedures, affecting the final field season in year 2000. However, there was no reason to use COC forms prior. Extensive QC documentation was not possible for the research project due to the limited budget available for chemical analyses.

The goal of the STAR grant is to further the science. To meet this goal the results of the WSU research have been presented to the scientific community via presentations at regional to international scientific conferences, and as published abstracts, posters, technical reports and manuscripts in the peer-reviewed literature during the past 3 years. This has allowed for a significant degree of peer review and discussion with other scientists in this field. Indeed, the response to the WSU research has been extremely positive, with several recent invited presentations at USEPA, national and international conferences, requests to conduct similar procedures at other USEPA Superfund sites, and requests for short-course training at national meetings. Finally, the American Society for Testing and Materials, and the USEPA have requested that WSU develop standardized guidance for the WSU *in situ* methods based on the useful results of this STAR project.

Specific responses to each ARCADIS question are provided below. If you have any further questions do not hesitate to ask.

Sincerely,

G. Allen Burton, Jr., Ph.D.

Brage Golding Distinguished Professor of Research and Director

Attachments:

WSU Database (Electronic)

New Data (Hard and electronic; Received after ERA completed)

QA Program Documentation from 3 Analytical Labs (WSU, Brookside, MSE-HKM)

USEPA STAR Project Proposal

AK5 042697

Copy of ARCADIS Letter with Responses Added

Subject: AK Steel Corporation, Middletown Works
RCRA 7003 Order, Docket Number R7003-5-00-002
Wright State University Data for Dick's Creek, Ohio

5 July 2001

ARCADIS Project No.: M1000848.0001
Contact:

Dear Mr. Cygan:

AK Steel and ARCADIS G&M first became aware that Allen Burton at Wright State Extension: University (WSU) was conducting research in Dick's Creek following a presentation 11 of preliminary results at the 1999 meeting of the Society for Environmental Toxicology and Chemistry (SETAC). When contacted, Dr. Burton declined to make additional information available regarding his study or its results. The U.S. Environmental Protection Agency (USEPA) later referenced WSU data in the subject order, dated August 17, 2000. AK Steel then requested the data from USEPA. USEPA responded on September 22, 2000 with a largely qualitative package that included a copy of the SETAC presentation but did not include a useable data set. ARCADIS G&M again requested data and supporting documentation in an email to Gary Cygan dated March 20, 2001. Subsequently, in its comments on Revision 1 of the Human Health and Ecological Risk Assessment Work Plan (undated, received in April 2001), USEPA requested that AK Steel incorporate the WSU data in the risk assessments for the site. After additional requests by AK Steel, USEPA provided an Excel spreadsheet on May 8, 2001. However, it was not possible to interpret or even understand the data based on the information contained in the spreadsheet. AK Steel submitted a letter request for supporting information, and USEPA responded with a package of limited supporting documentation on May 25, 2001.

ARCADIS G&M has reviewed the WSU data spreadsheet and supporting documentation. After this review, we have serious reservations about the quality and usability of the data. It is clear that these data were not collected under the strict quality assurance/quality control (QA/QC) procedures expected of AK Steel. A list of questions and requests for additional information is provided below. AK Steel cannot use the data without the requested information. Please respond to each point to facilitate the review and interpretation of the WSU data.

1. The Dick's Creek sample location map indicates that samples were collected at Outfall 003, Outfall 002, and the confluence of Monroe Ditch and Dick's Creek. No WSU data were included for these locations. These locations are relevant to the risk assessments for

AK5 042698

the site, and any data collected there must be provided.

Response: These sites were only sampled during 1997-1999 as part of WSU research described above. These data were not included in the ERA as they were deemed too old to be highly relevant.

2. The supporting documentation indicates that extensive *in situ* and laboratory toxicity testing has been conducted at the site. If the USEPA considers the toxicity test results valid and intends for us to use them, it must provide the data. Supporting documentation and water quality data (dissolved oxygen, ammonia, etc.) must also be provided.

Response: Survival and water quality data are tabularized and are part of the EPA ORD database. The ERA (Chp. 4, pp. 35-38) provides a summary only of the trends of laboratory and field results from studies conducted at Dicks Creek during the 1998-2000 field seasons. Therefore, not all raw data for all tests were provided in this document. Tissue, sediment and water chemical results used in the ERA were the only data provided in their entirety.

3. Tissue data from the August 2000 sampling event were not provided. The WSU data file states "as of 10/9/2000 the tissue samples from 8/18/00 have not been received from the chemists." The WSU data compilation was provided to us well after October 2000 (7 months later), and the tissue data are most likely available and must be provided.

Response: Some data were received after the ERA was completed. They have been provided (attachment). It is interesting to note that these data support the ERA conclusions and, in addition, document tissue contamination of exposed amphipods. This note appears on Tab R of the ERA database. Data have been received from the chemistry lab and is provided in the "Dicks new ERA data" file (this is a separate data base).

4. The supporting documentation contains conflicting statements regarding *in situ* exposure durations. Page C-4 lists the exposure duration for the invertebrates *Chironomus tentans*, *Hyaella azteca*, and *Lumbriculus variegatus* as "5-10d," whereas page C-5 states that "after 48h, 1 wk, 2 wk, 3 wk and 4 wks of exposure, four replicates were gently removed from the stream bed." Exposure durations must be provided on a sample-by-sample basis. This information is critical for inclusion of tissue data in the risk assessment for aquatic-feeding wildlife.

Response: The statements are not conflicting, rather show that exposure periods varied depending on the research experiments. Five – ten day exposures were used in the EPA ORD study, 48 hr to 4 week exposures were used in a MS thesis project.

AK5 042699

In 1998, *in situ* exposures were 7d for all organisms: *H. azteca*, *C. tentans*, *D. magna*, *P. promelas* and *L. variegatus*. 1999 and 2000 *in situ* exposures were 3d for *P. promelas* and *D. magna* and 4d for *H. azteca*, *C. tentans*, and *L. variegatus*.

5. The WSU data compilation includes no fish tissue analytical results (excepting one control fish sample analyzed for lipids). WSU has apparently prepared an ecological risk assessment for Dick's Creek, but it is difficult to understand how an appropriate site-specific assessment could be conducted for piscivorous wildlife without measurements of PCBs in whole-body fish tissue. The USEPA must confirm whether it has sponsored any analyses of whole-body fish tissue and provide any missing data.

Response: WSU did not collect fish tissue from Dicks Creek; therefore, fish tissue data provided by Ohio EPA were used in the risk assessment. These data values can be found in Table 13 and Appendix A4, "Exposure Characterization Calculations: Omnivorous fish, of the ERA. No fish lipid values were provided by OEPA, therefore, these values were taken from the literature as cited in the ERA.

6. The supporting documentation provided by USEPA refers to a Quality Assurance Project Plan (QAPP) for the US Environmental Protection Agency's Freshwater Sediment Toxicity Methods Evaluation (Burton, 1997). We have previously requested the QAPP for WSU's work at the Dick's Creek site. The USEPA must provide this document.

Response: QAPP provided (attachment)

7. Analytical methods are not provided for all analyses but are presumably included in the WSU QAPP and the analytical laboratory reports.

Response: Water, sediment and tissue chemical analysis methods conducted by the Dr. Tiernan's laboratory at WSU are summarized in Appendix F "Chemical Analyses" of the ERA. Dr. Tiernan's laboratory has an international reputation as one of the top facilities in the world for trace level analyses of chlorinated hydrocarbons in complex matrices. They helped develop methods for the USEPA and had a lead role in the USEPA National Dioxin Study. During the past couple years they have had a multi-million dollar contract with the State of New York and undergone extensive audits for QA/QC. As discussed above, due to the limited budget of this project, the analytical labs did not provide extensive QA/QC documentation.

8. Copies of the chain of custody forms were provided for only some of the analyses reported in the WSU data compilation. The remaining chain of custody forms must be provided.

Response: As discussed above, the research nature of the WSU studies did not dictate need for COCs; however they were used in 2000 (excluding a Ph.D. research project on groundwater-surface water interactions). At this time, we do not know what COCs have been provided to ARCADIS. A list of missing COCs from 2000 samples is needed in order to provide them to ARCADIS.

9. The chain of custody form for two "background" samples collected on 9/6/00 contains the note: "Steve Weil knows these samples are to arrive to replace the two that were contaminated with Durban." WSU must clarify how the samples were contaminated, as well as indicating whether "Durban" is a typographical error.

Response: The confluence water sample, collected 8/18/00 did contain Dursban. Since this was an unexpected result, the sample was collected again at the same site and reanalyzed for HIF. This second sample again contained traces of Dursban. Standard QA/QC lab blanks or other samples run concurrently with the Dicks Creek confluence sample did not contain Dursban.

10. A chain of custody form for three porewater samples includes a sample collection date of 8/17/00 and "spin" dates (8/23/00 through 8/31/00). WSU must describe how these porewater samples were collected.

Response: Porewaters were collected according to ASTM, 1994 and Environment Canada, 1994a guidelines. Centrifugation of homogenized sediments at 10,000 g for 30 min.

11. The dates of analysis must be reported, to allow determination of whether recommended holding times were exceeded. The chain of custody forms indicate that water samples were provided to the analytical laboratories as many as ten days after sample collection.

Response: This information may be available if a list of specific samples in question is provided. Note that exceeding water holding times will not increase PCB, PAH or metal concentrations; rather will decrease them.

12. The USEPA has not provided quality control data from the analytical laboratories, even though the laboratories provided letters stating that this information is available. These data must be provided.

Response: Dr. Tiernan's laboratory (WSU) provided the information required to calculate detection limits for the most of the data analyzed by their laboratory. Additionally, laboratory control standards (Tiernan lab), lab blanks (Tiernan lab)

and animal tissue tank blanks (Burton lab) were completed and are available. Tank blank data have been incorporated into the database, however, not all laboratory control standards and lab blanks have been incorporated and are located with the raw data in laboratory reports provided by the Titternan lab. See also above related responses.

13. The USEPA has not provided copies of the analytical laboratory data reports. Relevant information from these reports (e.g., qualifiers, reporting limits, instrument detection limits) is generally not included in the WSU data compilation. The laboratory data reports must be provided. Also, WSU must indicate whether the data entry has been checked against the laboratory reports.

Response: See above related responses, regarding research vs. litigation objectives. Data qualifiers and reporting limits are not available. The data have been spot checked against the original laboratory reports.

14. The WSU data was not provided in database format, and conversion to database format will be cumbersome. Many laboratories provide electronic data deliverables in database format. If such electronic files are available from either WSU or the analytical laboratories, they must be provided.

Response: The WSU database provided to TetraTech for the ERA is in electronic format (Microsoft Excel).

15. The WSU data compilation uses inconsistent and sometimes obscure nomenclature for sample locations. This will unnecessarily complicate data management.

Response: As discussed above, these data were from research projects where the study design differed.

16. In the WSU data file, non-detect values are set to zero or left blank, and sample-specific reporting limits and instrument detection limits are not provided for most analytes. The USEPA has required that a non-zero surrogate value be substituted for non-detects for use in our risk assessments. Also, the practice of leaving non-detect cells blank makes it difficult to distinguish whether a constituent was not detected or was not analyzed. For example, it is not possible to determine whether the same suite of PCB congeners was included in all PCB analyses. This information should be included in the laboratory reports, which must be provided (as stated previously).

Response: WSU reported the data in the ERA database as they appeared on the original data reports provided by the analytical laboratory. On the electronic

format of the database all non-detect values were flagged by a red comment flag and are noted as "ND" in the comment box. These flags may or may not appear on hard copies of the data. If values were reported by the lab were zero, they were entered as zero in the database. Since this was a research project, WSU was not required to substitute a non-zero surrogate value for non-detects.

17. A different reference area was used for each year of the WSU study. A rationale must be provided for the switching of reference areas. Also, WSU must indicate why Little Sugar Creek is an appropriate reference area for Dick's Creek. Little Sugar Creek is relatively distant from Dick's Creek (though it is close to WSU). As such, local weather patterns that may affect in situ toxicity and bioaccumulation in Dick's Creek would not necessarily be reflected in the results for Little Sugar Creek.

Response: As state above this was a research project, where selecting the optimal reference site was part of the research. After much testing, an acceptable reference location was not located within the Dicks Creek watershed area. All locations tested (i.e. Elk Creek, confluence of North and main branch) had unacceptable water quality on occasion. Since a concurrent testing at reference location is required, Little Sugar Creek was evaluated as a reference site to satisfy protocol.

18. Four species (*Pimephales promelas*, *Daphnia magna*, *Corbicula fluminea*, and *Hexigenia limbata*) were not included in the tissue data set but are listed as toxicity test organisms in the supporting documentation. A chain of custody form indicates that *Corbicula* samples were submitted for analysis. WSU must clarify whether tissue analyses were ever conducted for these species and provide any missing data.

Response: *P. promelas*, *D. magna* and *H. limbata* were not analyzed due to insufficient tissue quantities. *C. fluminea* were not analyzed from MS thesis research due to budget constraints. Indigenous *Corbicula* tissue samples were submitted for analysis and results are available (attached data as: Burton WSU sample # 780, 781, 782, 783, 784, and CDC).

19. During the "1998" sediment sampling event (actually conducted in January, 1999), five sediment samples were collected at each sampling location. The WSU data file does not indicate any distinction between these samples. WSU must indicate whether the samples were collected as true replicates or are distinct in some way.

Response: The samples are distinct spatial samples collected in accordance with the EPA ORD study design for year one, to evaluate spatial toxicity. Individual sediment samples were labeled site sed-1, site sed-2..... site sed-5. Exact locations of sediment sample collection are noted in field notebooks and are within ~ 1 meter of

each other.

20. Tissue samples for the October, 1998 sampling event were obtained from several *in situ* exposure methods. The exposure methods were inconsistent between the study area and reference locations, and between species. All locations and species included a water column (WC) exposure, and some locations and species included an "against sediment" (AS) exposure and a porewater chamber (PWC) exposure. No data are reported for the surficial sediment (SS) exposure described in the supporting documentation, although this exposure method is most representative of actual benthic invertebrate exposures occurring in the field. These discrepancies hinder data interpretation and must be explained.

Response: Again, the methods were not "inconsistent" as they were designed to address specific research questions accurately. During the October, 1998 *in situ* sampling event, *C. tentans*, *H. azteca*, *P. promelas*, *D. magna* and *L. variegatus* were exposed to either water column only (no sediments or sediment contact), against sediments (in direct sediment contact across chamber mesh) and surficial sediment exposure (chamber ½ filled with sediment). Chambers were placed at the Amanda School site on Dicks Creek and at Elk Creek. All organisms and treatment exposures were the same at each site, no tissue sample data indicates complete mortality of organisms for the treatment at that site. There was complete mortality of all organisms in the surficial sediment treatment at the Amanda School site. Porewater tissue samples were from a M.S. research experiment, also conducted in October of 1998.

21. It appears that the "1998" sediment PCB results for the Amanda School sample location were mislabeled as "dicks/elk." WSU must confirm whether this interpretation is correct.

Response: The "species" name is correct for the Amanda site, however the "site" name "dicks/elk" was in error on the original spreadsheet. The site AMD SED is in fact Amamda School site sediment.

22. Total organic carbon (TOC) and dissolved organic carbon (DOC) were not reported for the "1998" and 1999 sampling events, although they were analyzed for the sampling events in 2000. WSU must confirm that TOC and DOC were not analyzed in the earlier sampling events. These parameters are critical for interpreting analytical results for PCBs and PAHs.

Response: TOC and DOC were not analyzed for during years 1998 and 1999.

23. The "Beaver Dam" location sampled in 1999 is shown on WSU's map but is not included

in the verbal description of sample locations. This location must be described.

Response: "Beaver Dam" is located at Dicks Creek river mile 2.36, between the USGS gauging station site and the Amanda School site.

24. Polychlorinated biphenyl (PCB) and lipid data are provided for a tissue sample labeled "indigenous," collected from the North Branch/Dick's Creek confluence in 1999. The species of the sampled organism(s) must be provided.

Response: The indigenous sample was a collection of oligochaete worms from sediments in the confluence of the north and main branches of Dicks Creek.

25. The only other "indigenous" samples were reported for three unidentified locations sampled in 1999 (labeled as LSR/G.camp, LSR.P.Hill, and LSR/203). Only lipid data were reported for these samples. These sample locations must be identified and mapped, and the species must be identified. Also, it is unclear why samples would be collected and analyzed only for lipids. WSU must confirm whether PCB analyses were conducted for these samples and provide any missing data.

Response: These samples were collected from the Little Scioto River in Marion, Ohio so the results are irrelevant. As discussed above, the Little Scioto River is another site under the USEPA ORD grant, but should not have been included with this Dicks Creek database. The Dicks Creek data were extracted from a larger database that contained data from all three of the sites studied under the EPA ORD grant.

26. The WSU data compilation contains the note: "as of 101912000 the indigenous samples from 1018199 have not been received from the chemists." This note appears to apply only to PAH analytical results. The data compilation does not contain a note regarding PCB results for the three unidentified locations. WSU must state which "indigenous" tissue samples were supposed to be analyzed for PAHs and clarify the current status of the PAH data.

Response: Results from these tissue samples have been returned and are available in the "Dicks new ERA data" file (separate file). Samples were for PAHs and PCBs from the following:

- 780 – indigenous *Corbicula* Amanda School site, 8/00**
- 781 – indigenous *Corbicula*, USGS site, 8/00**
- 782 – indigenous *Corbicula*, Amanda School site, 10/99**
- 783 – indigenous *Corbicula*, Beaver dam site, 10/99**
- 784 – indigenous *Corbicula*, Caesar Creek site, 10/99**

CDC – indigenous *L. variegatus*, Dicks Confluence site 10/99
YR-indig. – indigenous oligochaetes, Dicks landfill tributary 6/99

27. Tissue data for indigenous organisms are more relevant for wildlife risk assessment purposes than data from in situ or laboratory exposures. WSU must confirm whether all data for indigenous organisms have been provided.

Response: Those noted in 26 above are the only indigenous organisms collected at Dicks Creek by WSU for the EPA ORD grant. Indigenous *Lumbriculus* tissue from the landfill tributary (1998) was not included in the ERA database, although it was used in the WSU ERA. These data are now located in the “Dicks new ERA data” file)

28. Lipid concentrations were reported for *L. variegatus* tissue samples labeled as LSR/G.camp, LSR/P.Hill, and LSR/203. As stated previously, the locations for these samples must be properly identified. Also, the type of exposure must be indicated (e.g., in situ exposure method, laboratory test duration). Any PCB data or other analyses corresponding to these samples must be provided.

Response: See above response. These are Little Scioto River samples, therefore irrelevant.

29. Tissue data (PCBs and lipids in *L. variegatus*) were provided for four 28-day laboratory tests conducted in 1999. One test used sediment from the Amanda School location, and the other three used sediment from unidentified locations (labeled as Trout farm, 50trout/50flori, and LSR/ref). The latter samples must be properly identified. If one or more of these samples was used as a control, it must be identified as such.

Response: These three sediments were laboratory controls used as reference samples. Trout Farm sediment is from a stream near WSU, 50 trout/50Flori is 50% Trout Farm sediment and 50% Flourisant soil and LSR is a reference site on the Little Scioto River.

30. Tissue concentrations of polycyclic aromatic hydrocarbons (PAHs) were provided for *L. variegatus* exposed *in situ* at two sample locations in 1999 (Beaver Dam and Caesar Creek). Although data were provided for WC, AS, and PWC exposures, no SS exposure was included. The SS exposure is the most representative of actual benthic invertebrate exposures in the field. WSU must confirm that PAHs in tissue were not measured for the SS exposure.

Response: PAHs were measured in *L. variegatus* samples exposed to WC, AS, and

PWC exposures at Beaver dam and Caesar Creek only. They were not measured in SS samples at any of the *in situ* test sites during this exposure period due to budget limitations.

31. Tissue concentrations of PCBs and lipids were reported for a *H. azteca* water- only control for a 4-day laboratory test conducted in 1999. No other data were provided for *H. azteca* 4-day laboratory tests. All test data associated with the *H. azteca* control sample must be provided.

Response: *H. azteca* tissue samples were not analyzed from this experiment although survival was high enough to accommodate enough tissue mass for analysis; again due to budget limitations.

32. A tissue lipid concentration was reported with the 1999 data for an unspecified fathead minnow (*Pimephales promelas*) laboratory control sample. No other data were provided for fathead minnows. All fathead minnow data must be provided.

Response: Minnows were not analyzed due to budget limitations.

33. No PCB data are provided for the mini monitoring well (MW) sample collected from the USGS Gauging Station in June 2000. The data file contains the note: "where is this sample?" WSU must clarify the current status of the missing PCB data.

Response: This sample vial was broken and the contents lost prior to analysis (Tab 1 ERA database).

34. DOC data are reported for all water samples collected during the June 2000 sampling event, except the porewater samples collected using nested piezometers. WSU must confirm whether the piezometer samples were analyzed for DOC.

Response: No, piezometer porewater samples were not analyzed for DOC due to limited sample size.

35. The units must be provided for the depth of the piezometer samples.

Response: Piezometer sampling depths are in centimeters.

36. The DOC data reporting for the June 2000 sampling event is unclear, because both the surface water samples and the in situ chamber water samples for the WC exposure are labeled as "sw". A chain of custody form was not provided for these samples. It is possible that the June 28 samples were surface water, and the June 30 samples were from

WC chambers. WSU must confirm whether this interpretation is correct.

Response: Yes, that is correct, the three "sw" samples collected on 6/30/00 are in fact WC samples from within the *in situ* chambers after exposure and not sw samples. The chain of custody forms for these samples are available. Note tab U of WSU ERA database.

37. It appears that sediment TOC results are mislabeled as DOC, for both the June and August 2000 sampling events. WSU must confirm whether this interpretation is correct.

Response: TOC and DOC do not appear to be mislabeled for either June or August 2000 (Tabs T and U of the WSU ERA database). Labels are correct as they appear.

38. The WSU analytical program should have included TOC as well as DOC for water samples. The DOC analysis does not include organic carbon present on particles, which are filtered out of the sample for DOC analysis but not PCB analysis. However, the partitioning of PCBs between the freely dissolved and organic carbon-complexed phases is determined by both particulate and dissolved organic carbon. Freely dissolved concentrations are the most relevant concentrations for predicting aquatic toxicity.

Response: TOC was not analyzed for on any water sample from Dicks Creek. This would have been useful data, but could not be collected due to budget limitations.

39. It appears that for the herbicide, insecticide, and fungicide results for Little Sugar Creek (June, 2000), the sediment samples are mislabeled as water. Also, it appears that for the same location and date, the fungicide surface water results are mislabeled as sediment. WSU must confirm whether this interpretation is correct.

Response: Brookside Laboratories mislabeled the matrices for herbicide and insecticide in their report. On Tabs W and X of the ERA database, sample 303-LSC-062800, Lab number WEO63006, should be replaced by: 307-LSC-022800. The sample is a sediment, not a water sample as recorded. Brookside did not report the correct matrix of the sample as noted on the WSU chain of custody form for these samples. The matrices on the fungicide tab Y are correct.

40. For the June 2000 sampling event, all samples that were analyzed for herbicides and insecticides were also analyzed for fungicides, except for surface water collected from the USGS Gauging Station. WSU must confirm whether this sample was analyzed for fungicides and provide any missing data.

Response: The surface water sample collected from the USGS gauging station

AK5 042708

during the 28 June, 2000 sample run was analyzed for fungicides and is listed in the WSU ERA database on Tab Y, sample number 313-US-062800, Lab number WEO630007.

41. Two sets of herbicide and insecticide results (all non-detect) are reported for surface water collected from the Amanda School location in June 2000. WSU must clarify the number of surface water samples analyzed.

Response: There was only one surface water sample from the Amanda School site collected 28 June 2000 that was analyzed for HIF. This was a duplication error, as entered. This is obvious as the sample number, lab number and data are identical. This duplication error was on the herbicide tab only. See ERA database Tabs W, X and Y.

42. For the June 2000 sampling event, tissue data are provided for c. tendons and L. variegatus "control tissue" samples. WSU must clarify how controls were designed for *in situ* tests.

Response: These tissues were laboratory blanks taken from the same in-house cultures as organisms used for *in situ* toxicity testing. These tissues provided background tissue levels of contaminants analyzed for.

43. Data for blank samples are provided for the June 2000 sampling event (three blanks) and the August 2000 sampling event (two blanks). WSU must identify the blank type(s) (e.g., matrix, collection method) and the data to which the blanks were intended to apply.

Response: These were method blanks intended to accompany the data they are reported with. If the blank is grouped with sediments, then it is a sediment blank. Sediment and water samples are matrix blanks and tissue blanks are method blanks that are extracted and treated as a regular sample without the actual test material incorporated.

44. For the August 2000 sampling event, TOC data are provided for sediment collected from two Dick's Creek locations and Little Sugar Creek. No TOC data are provided for "background" sediment samples from the North Branch of Dick's Creek confluence or Monroe Ditch at Todd Hunter Road. WSU must confirm whether TOC was analyzed for these samples.

Response: Data are available for Todd Hunter Road and Confluence sites. WSU requested TOC analysis for these sediment samples, however, the samples were analyzed by ASTM method D2974 for total carbon (TC) as opposed to the requested

AK5 042709

total organic carbon. These data do not appear in the database as results were obtained after its release.

Additional Response to Question nos. 3, 18, 26 and 27: Data that arrived after the ERA was submitted are in *Dicks new ERA database* (MS Excel file). A review of the new tissue data (from August 2000 sampling) show PCB and PAH residues within the same range as the June 2000 data. Indigenous organism tissue residues were all within the model predictions for benthic species. Therefore, the conclusions of the ERA do not change and are further supported.

Finally, we restate our request for any and all data collected from Dick's Creek, its tributaries, and any reference areas, as well as any supporting documentation. This request includes but is not limited to the specific requests listed above.

Response: All data has been provided.

If you have any questions or require additional information, please contact me.

Sincerely,

Timothy R. Barber, Ph.D. Project Manager

AK5 042710



Tetra Tech EM Inc.

200 E. Randolph Drive, Suite 4700 ♦ Chicago, IL 60601 ♦ (312) 856-8700 ♦ FAX (312) 938-0118

June 28, 2001

Mr. Allen Wojtas
Work Assignment Manager
Enforcement and Compliance Assurance Branch
Waste, Pesticides and Toxics Division (DE-9J)
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Technical Review Comments on AK Steel Corporation's
"Motion for an Injunction Under the All Writs Act
(Expedited Ruling Requested)" and Exhibits 1, 2, 3, and 4
Contract No. 68-W9-9018, Work Assignment No. R0580524**

Dear Mr. Wojtas:

As directed by Mr. Gary Cygan, the U.S. Environmental Protection Agency (EPA) technical contact and project manager, and Mr. Michael Mikulka, the EPA technical advisor, Tetra Tech EM Inc. (Tetra Tech) and its subcontractor, AquaQual Services, Inc. (AquaQual), technically reviewed AK Steel Corporation's (AK Steel) "Motion for an Injunction Under the All Writs Act (Expedited Ruling Requested)" (the motion) and Exhibits 1 through 4 of the motion. All the exhibits were prepared by ARCADIS Geraghty & Miller for AK Steel and are identified below.

- Exhibit 1: "Human Health Risk Assessment"
- Exhibit 2: "Evaluation of Potential Risks Associated with On-Site Soils"
- Exhibit 3: "Evaluation of Potential Risks Associated with On-Site Sediment and Surface Water"
- Exhibit 4: "Ecological Risk Assessment for Dick's Creek"

The exhibits were reviewed to assess their technical adequacy and consistency with the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" dated January 16, 2001, and the technical review comments included in EPA's April 11, 2001, letter disapproving this work plan. Also, the exhibits were compared to (1) the draft "Human Health Risk Assessment, Dick's Creek and Tributaries, AK Steel, Middletown Works, Facility, Middletown, Ohio" prepared by Tetra Tech and dated November 17, 2000; (2) the "Draft Ecological Risk Assessment for Dick's Creek" prepared by AquaQual and dated May 1, 2001; (3) any available facility data; and (4) the open, peer-reviewed scientific literature.

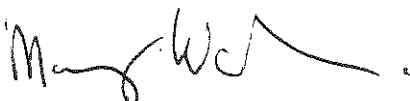
AK5 040763

Mr. Allen Wojtas
June 28, 2001
Page 2

Tetra Tech assumed primary review responsibility for Exhibits 1 through 3, and Dr. G. Allen Burton, the president of AquaQual, was the primary reviewer for Exhibit 4. Exhibits 1 through 3 are all human health risk assessments, and Exhibit 4 is an ecological risk assessment. Therefore, comments on Exhibits 1 through 3 are presented in Enclosure 1 of this letter, and comments on Exhibit 4 are presented in Enclosure 2.

If you have any questions regarding the comments prepared by Tetra Tech or AquaQual, please call me or Eric Morton at (312) 856-8700.

Sincerely,



Mary Wojciechowski
Project Manager

Enclosures (2)

cc: Bernie Orenstein, EPA Regional Project Officer (letter only)
Gary Cygan, EPA Technical Contact and Project Manager
✓ Michael Mikulka, EPA Technical Advisor
Ed Schuessler, Tetra Tech Regional Manager (letter only)
Art Glazer, Tetra Tech Program Manager
Eric Morton, Tetra Tech Site Manager
G. Allen Burton, AquaQual

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ENCLOSURE 1

TECHNICAL REVIEW COMMENTS ON EXHIBITS 1 THROUGH 3

(Ten Pages)

AK5 040765

TECHNICAL REVIEW COMMENTS ON EXHIBITS 1 THROUGH 3

General and specific technical review comments on Exhibits 1 through 3 are presented below. To the extent that specific comments are related to multiple exhibits, this fact is noted in the comments rather than presenting the same or similar comments multiple times. References used to prepare the comments on Exhibits 1 through 3 are listed after the comments.

GENERAL COMMENTS

1. Exhibit 1 does not consider two key sources of investigative data. The first source is data for surface water and sediment samples collected from the Landfill Tributary and Dick's Creek by the U.S. Environmental Protection Agency (EPA) after installation of the trench system in 1998. The second source is data for surface water and sediment samples collected by Wright State University (WSU) researchers after installation of the trench system. Sediment in the landfill tributary and Dick's Creek must be considered a heterogeneous medium. Therefore, to be complete and appropriately conservative, it is necessary to include and examine all available data in the risk assessment. Moreover, in some instances, the EPA and WSU data indicated higher contaminant concentrations than were used in the risk assessment. Without consideration of the EPA and WSU data, Exhibit 1 must be considered incomplete and may underestimate the potential risk to human health.
2. Also, the three human health-related risk assessments (Exhibits 1 through 3) all generally follow the framework recommended by EPA as well as elements of the technical approach outlined in the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" (the work plan) (ARCADIS Geraghty & Miller [AGM] 2001a). However, the analyses and conclusions in the exhibits are flawed; in general, the analyses and conclusions are unconservative and misleading. Specifically, Exhibits 1 through 3 misrepresent exposure and risks potential through (1) the exclusion of analytical data collected by EPA and WSU (see above), (2) using inappropriate exposure potential assumptions - for example, Exhibit 1 assumes receptors will be exposed throughout the length of Dick's Creek, Exhibit 2 assumes workers will be exposed only in the areas of highest PCB concentrations (but uses an average PCB concentrations based on all samples collected in the OMS Operations area), and Exhibit 3 assumes that receptors will be exposed equally to all on-site surface water bodies, when exposure potential is clearly highest in Monroe Ditch which also has the highest contaminant concentrations, (3) under represents the potential exposure and risks associated with fish ingestion by misapplying national average intake rates to a unique exposure situation, and (4) applying an inappropriate target risk to receptors from the general population. These flaws in reasoning, calculation, and conclusion are discussed in the specific comments below. Based on these flaws, the receptor-specific risks presented in the exhibits and the general assertion that contamination in Dick's Creek, Monroe Ditch, and in on-site areas is not associated with imminent and substantial risk are unfounded.
3. The work plan for the HHRA is still a draft and has not been approved by EPA, yet Exhibits 1 through 3 were submitted. Exhibits 1 through 3 do not address previous comments from EPA that raise serious concerns about the technical methods used to evaluate human health risk. It is imperative that Exhibits 1 through 3 be revised to address EPA's comments on the work plan.

SPECIFIC COMMENTS ON EXHIBIT 1

1. In Section 2.1, the text states that AK Steel Corporation (AK Steel) "owns the land surrounding and underlying those portions of Dick's Creek between river mile 2.5 and 5.6." This statement is inaccurate. The Miami Conservancy District (MCD) owns the land immediately adjacent to Dick's Creek and along its length and is responsible for its maintenance (EPA 2000b). Therefore, persons walking along and through Dick's Creek are on public lands and are not trespassing. Section 2.1 should be revised accordingly.
2. Section 2.3 discusses previous investigative and remedial activities at the facility and suggests that the only source of polychlorinated biphenyls (PCB) is the OMS Operations area, also known as the slag processing area. However, as discussed in EPA's draft human health risk assessment (HHRA) for Dick's Creek, several other potential source areas exist (Tetra Tech EM Inc. [Tetra Tech] 2000). Evidence of these potential source areas is summarized below.

A report prepared by ARCADIS Geraghty & Miller (AGM) in 1999 summarizes (1) detection of PCBs in seeps originating along the east bank of the Landfill Tributary (referred to in the AGM report as Monroe Ditch), (2) design and installation of trench collection systems to capture seeps flowing into the Landfill Tributary, and (3) the results of a multimedia investigation conducted to determine the probable sources of the PCB contamination detected in the seeps (AGM 1999). The report notes that PCBs were detected in sediment at three locations in Dick's Creek: 200 feet upstream of the confluence of the Landfill Tributary and Dick's Creek, at Yankee Road about 200 feet downstream of this confluence, and at Main Street about 1.5 miles downstream of the AK Steel facility. The PCBs downstream of the confluence of the Landfill Tributary and Dick's Creek are attributed to discharge from the Landfill Tributary. However, the AGM report concludes that the homologue data is "inconclusive as to a single source at the most upstream occurrence of PCBs in Dick's Creek." This statement suggests that one or more sources other than the Landfill Tributary are responsible for the PCB contamination in Dick's Creek.

Also, during a site visit in May 2000, EPA observed two locations of possible new seeps flowing into the Landfill Tributary. EPA's observations are summarized below.

- Just upstream of the point where the Landfill Tributary bends to the east (about 800 feet upstream from Dick's Creek), water was observed seeping into the tributary from the southwest bank. EPA noted that "this appears to be a new seep which has not been sampled or identified previously" (EPA 2000a).
- At the downstream end of a culvert in the Landfill Tributary about 1,350 feet upstream from Dick's Creek, a white or grey area was noted along the west bank. EPA noted that this "could indicate another possible point of seepage" (EPA 2000a).

These potential seeps were both observed along the west bank of the Landfill Tributary and are unlikely to be associated with potential source areas located east of the tributary in the slag processing area.

It is clear that potential source areas other than the slag processing area may be contributing to PCB contamination in Dick's Creek. These source areas may include the location of historical releases from AK Steel outfalls and from AK Steel landfills located west of the Landfill

Tributary. Therefore, Exhibit 1 and the motion should be revised to clarify that all potential source areas have not been identified.

3. Section 2.4 discusses the migration and exposure pathways considered in Exhibit 1. The text states that "groundwater derived from aquifers other than the perched groundwater zone also is not a complete exposure pathway." This conclusion is not supported by available data as discussed below.

Exhibit 1 is partially based on the assumption that silt and clay till prevent vertical migration of PCBs from the perched groundwater zone to the upper aquifer, intermediate aquifer, and lower aquifer. However, the "Soil and Groundwater Investigation Plan" (SGIP) states that "the upper silt and clay are so thin or discontinuous that they do not form a perching surface" (AGM 2001b). This statement indicates that in some areas, the silt and clay hydrostratigraphic unit does not act as a true confining layer and may allow vertical migration of PCBs into the upper aquifer. In addition, this statement contradicts AK Steel's claim that the intermediate and lower aquifers do not exist in the area of interest for Exhibit 1. If the intermediate and lower aquifers actually do not exist in the area of interest, PCB transport into these units is not an issue. However, AK Steel has not provided adequate information to allow a determination of whether the intermediate and lower aquifers are present in the west portion of the buried valley. The SGIP text does not adequately address this issue, and cross-sections provided in the SGIP terminate at least 20 feet above bedrock.

Exhibit 1 indicates that one groundwater sample collected from an upper aquifer well (MDA-085) contained PCBs during sampling performed in June and July 1998. According to the SGIP, this assertion is incorrect. SGIP Figure 7, "PCB Concentrations in Upper Aquifer Groundwater," indicates that PCBs were also detected in upper aquifer well GM-35 S at a concentration of 0.58 micrograms per liter ($\mu\text{g/L}$); the figure does note that this was an estimated concentration. Exhibit 1 also states that PCBs have not been detected since 1998 in any groundwater monitoring wells installed in aquifers other than the perched zone, and Figure 7 indicates that no PCBs were detected in wells sampled in August and September 2000. However, wells MDA02S, MDA18S, MDA16S, and GM-30S were not sampled during this sampling event.

PCBs continue to be encountered in the perched zone, and AK Steel has not adequately demonstrated that the perched zone is hydraulically isolated from the upper, intermediate, and lower aquifers. In fact, the SGIP states that "if vertical flow occurs, only dissolved-phase PCBs would be expected to reach the upper aquifer because the upper silt and clay layer would act as a filter barrier for PCBs sorbed onto soil particles." This statement is accurate based on current knowledge of the nature and extent of the silt and clay hydrostratigraphic unit and indicates that vertical migration is possible between the perched zone and upper aquifer. PCBs have historically been detected in the upper aquifer, indicating a hydraulic connection between the perched zone and upper aquifer. Therefore, further investigation is warranted to determine the relationship between the perched zone and upper aquifer and the extent of PCB contamination in the upper aquifer.

Accordingly, exposure to groundwater derived from aquifers other than the perched groundwater zone may be a complete exposure pathway. Insufficient data is currently available to evaluate this pathway. Exhibit 1 should be revised to acknowledge this limitation and to retain the option of evaluating this pathway in the future.

4. As noted in specific comment 2 above, potential sources other than groundwater seeps that previously flowed into the Landfill Tributary may have contributed PCBs and other contaminants to Dick's Creek. Therefore, Section 2.4 should be revised to acknowledge these additional potential sources, which may include releases from other areas of AK Steel operations such as historical releases from AK Steel outfalls.
5. Section 3.1 states that Table 3-1 identifies all data sets evaluated for Exhibit 1. Table 3-1 does not list any EPA or WSU data sets. As noted in the general comment above, in some instances the EPA and WSU data sets contain contaminant-specific concentrations greater than those in the data sets evaluated for Exhibit 1. Without considering the EPA and WSU data sets, Exhibit 1 must be considered incomplete and may underestimate the potential human health risks. Therefore, Exhibit 1 should be revised to consider both the EPA and WSU data sets.
6. Section 3.1 discusses the basis for AGM's preferential use of homologue-, as compared with Aroclor-based PCB analytical data. Although EPA acknowledges that the PCB homologue method (EPA Method 680) provides more definitive identification of individual PCBs than Aroclor-based methods (such as EPA Method 8082), EPA does not agree that the homologue method provides more accurate quantitation of total PCB concentrations (EPA 1985, 1996). Method performance studies indicate that PCB congeners are recovered less well from environmental matrices than Aroclor mixtures. As stated in EPA Method 8082, "recoveries of congeners from environmental reference materials ranged from 51 to 66 percent of the certified Aroclor values" and "recoveries of congeners from soils spiked with Aroclor-1254 and Aroclor-1260 were between 80 and 90 percent" (EPA 1996). Therefore, total PCB values calculated by summing congener results are likely to be biased low, and risks calculated using such values may be underestimated.

In addition, the risk assessment methodology used by Tetra Tech for EPA's draft HHRA for Dick's Creek calculated risks separately based on Aroclor and PCB congener concentrations (Tetra Tech 2000). In the draft HHRA, the risks based on congener concentrations are less than those based on Aroclor concentrations. It is EPA's position that analytical methods should be selected by considering the regulatory requirements for the intended use of the data. Rather than replacing the Aroclor data with homologue data, Exhibit 1 should use both types of data and compare the risk results.

7. Section 4.2 states that "with regard to exposure to potentially impacted surface water and sediment, there is no evidence that people access the creek consistently at specific points." This statement is inaccurate. For example, people have regularly been observed congregating beneath the railroad bridge east of Yankee Road. Similarly, children from Amanda Elementary School have frequently been observed playing in and along Dick's Creek at a point just west of the school. Finally, worn paths have been observed to originate from paths adjacent to Dick's Creek and to extend to the water's edge. Clearly, human receptors do frequent particular locations in and along Dick's Creek, and particular human receptors are likely to frequent particular stretches of Dick's Creek more often than others. Exhibit 1 should be revised to acknowledge that receptors are likely to frequent particular stretches of Dick's Creek more often than others.

Also, EPA guidance suggests that exposure areas should be based on receptor activity patterns such as those discussed above and on contaminant distribution (EPA 1989b). Based on available sample analytical results, contaminant concentrations are not distributed evenly throughout

Dick's Creek. By averaging contaminant concentrations throughout the length of Dick's Creek, Exhibit 1 may underestimate risks for individual receptors.

8. As stated in Section 4.4.4, Exhibit 1 incorporates a fraction ingested term for evaluating potential exposure to contaminants in sediment through incidental ingestion. As stated in the technical review comments included in EPA's April 11, 2001, letter disapproving the risk assessment work plan, the application of a fraction ingested value of 0.5 for the sediment ingested from source term is not acceptable. The current soil ingestion data to which this term is applied does not include information regarding the timing (that is, event-driven or continuous) of the sediment ingestion relative to the time spent in a given activity or per activity. Exposure to sediment is expected to be largely event driven; therefore, the application of a fraction ingested term does not apply. Therefore, the exposures and risks associated with incidental sediment ingestion should be revised to remove the fraction ingested term.
9. The fish consumption rate and fraction fish ingested from the source are discussed in Sections 4.4.8 and 4.4.9, respectively. The reasonable maximum exposure (RME) fish consumption rate used in Exhibit 1 is 5.25 grams per day (g/day). This value represents the 90 percent upper confidence limit (90% UCL) on the mean of daily average per capita estimates of freshwater and estuarine finfish and shellfish consumption rates for the general population (Jacobs and others 1998). The use of fish consumption rates based on the general population does not adequately represent potential Dick's Creek anglers. In general, EPA recommends that "local or regional assessments of fish/shellfish consumption be performed whenever possible to avoid possible errors inherent in extrapolating standard values for the U.S. population to distinct subpopulations" and "national averages . . . are not predictive of all subgroups and regions on a scale fine enough to address local situations of potential concern" (EPA 1989a).

The population fishing at Dick's Creek (and, therefore, the ingestion rates relevant to their protection) does not fit the national average for several reasons. A significant low-income population is present in Middletown, Ohio. Specifically, about 15 percent of Middletown households have incomes at or below the poverty level (City of Middletown 2000). Individuals from these households may be more likely than the general population to ingest fish species that are not valued for recreational fishing. Exhibit 1 notes that several studies that "failed to show a relationship between low incomes and high rates of consumption of self-caught fish." However, other studies indicate that there may be a relationship between lower annual incomes and a greater fish consumption rate. For example, a study of Michigan sport angler fish consumption indicates that anglers with annual incomes of less than \$15,000 ingested about 50 percent more fish than anglers with annual incomes of more than \$40,000 (West and others 1993). Also, studies of anglers in Louisiana and Alabama suggest that persons with lower annual incomes may ingest more self-caught fish than persons with higher annual incomes (Fisheries Information Management System [FIMS] and Department of Fisheries and Allied Aquacultures [FAA] 1994).

Therefore, fish consumption by low-income human receptors in the Middletown area may be higher than the RME fish consumption rate of 5.25 g/day used in Exhibit 1. Table 10-67 in EPA's "Exposure Factors Handbook" notes that the mean sport fish consumption for Michigan residents with annual incomes of less than \$15,000 (near the federal poverty level) is 21.0 g/day with a 95% UCL of 25.8 g/day (EPA 1997). Similarly, EPA recommends use of mean and 95th percentile fish ingestion rates of 8 and 25 g/day for the recreational freshwater sport angler (EPA 1997). EPA acknowledges that with a higher fish consumption rate, anglers would be less likely

to ingest only fish caught in Dick's Creek. Exhibit 1 uses a fraction fish ingested from source value of 0.05 (5 percent) based on a study of the general population of New Jersey (Stern and others 1996). As noted above, EPA recommends that measurements based on average general population values not be used to represent unique local conditions.

Also, the RME fish consumption rate of 5.25 g/day used in Exhibit 1 corresponds to about 10 fish per year, each generating two 3.5-ounce filets. If it is assumed that an angler catches an average of about two fish of this size from Dick's Creek each month, this would correspond to a fish consumption rate of about 13 g/day. It is not unreasonable to assume that there may be anglers in the Middletown area who consume between one and two fish, each large enough to generate 2 3.5-ounce filets, per month. These assumed consumption rates should thus not be subjected to reduction by a "fraction fish ingested from source" term (in effect, the value for this term would be equal to 1). Therefore, Exhibit 1 should be revised to use a fish consumption rate between about 8 and 25 g/day associated with a fraction fish ingested from source value of 1. It is important to note that these changes alone would result in RME carcinogenic risks for the angler of greater than $1\text{E-}04$.

10. As discussed in Section 4.4.11, a dermal absorption factor for PCBs of 0.0166 was used to evaluate exposure to PCBs through dermal contact with sediment. This factor is stated to be based on a study of tetrachlorobiphenyl (Roy and others 1990). Exhibit 1 presents an equation stated to be based on the results of this study and on the assumption of a "linear relationship between organic carbon content and dermal absorption." However, the text does not identify or discuss the "low" and "high" total organic carbon contents evaluated by Roy and others (1990), nor is any evidence or justification provided to support the assumption of a "linear relationship between organic carbon content and dermal absorption." Therefore, the proposed dermal absorption factor for PCBs is not adequately supported.

EPA Region 5 recommends using a dermal absorption factor of 0.14 for PCBs (Tetra Tech 1998). This value is consistent with the value of 0.10 used to generate EPA Region 9 preliminary remediation goals for semivolatile organic compounds (EPA 2000c). Therefore, Exhibit 1 should be revised and the risks recalculated based on a dermal absorption factor of at least 0.10.

11. Exhibit 1 uses a target risk of 1 in 100,000 ($1\text{E-}05$) to evaluate recreators and anglers. This target risk is too high. Ohio's Bureau of Underground Storage Tank Regulations (BUSTR) and Ohio's Voluntary Action Program (VAP) are cited in support of the $1\text{E-}05$ target risk. However, neither BUSTR nor VAP guidance is directly applicable to the situation. The target risk range of $1\text{E-}06$ to $1\text{E-}04$ discussed in the "National Oil and Hazardous Substances Pollution Contingency Plan" (EPA 1990) is the most relevant and appropriate basis for selecting a target risk range for general population receptors such as recreators and anglers. The use of a targeted risk of $1\text{E-}06$ also helps to ensure that risks associated with multiple contaminants do not exceed EPA's risk range. Therefore, to be appropriately conservative for the general population, Exhibit 1 should use a target risk of $1\text{E-}06$, the low end of EPA's risk range. All conclusions drawn based on a target risk of $1\text{E-}05$ should be revised.

SPECIFIC COMMENTS ON EXHIBIT 2

1. Section 4.3.4 presents the fraction of soil ingested from source term value of 0.5 used in Exhibit 2. As noted in the technical review comments included in EPA's April 11, 2001, letter disapproving the risk assessment work plan, the application of a fraction ingested value of 0.5 for the soil ingested from source term is not acceptable. The current soil ingestion data to which this term is applied does not include information regarding the timing (that is, event-driven or continuous) of the soil ingestion relative to the time spent in a given activity or per activity should be revised to remove the fraction ingested term.
2. Section 4.3.5 notes that because "the areas that contain the highest concentrations of PCBs are located in a field behind a parking area and in the vicinity of the former drainage swale along the south boundary and are not likely to be accessed by site workers on a regular basis," it was "conservatively assumed that the most highly exposed site workers contact impacted surface soil two days per week." This rationale is misguided. The risk assessment evaluates potential exposures to the average PCB concentration in on-site soil. The receptor, in this case a site worker, is assumed to move randomly throughout the exposure area, in this case the OMS Operations area. The site worker will not be exposed only to the highest PCB concentrations located in only a portion of the OMS Operations area. Therefore, Exhibit 2 should be revised to use an exposure frequency of 250 days per year for the site worker (EPA 1991).
3. Section 4.3.6 indicates that the site worker is assumed to be exposed to soil through direct contact with a skin surface area corresponding to the hands and one-half of the head. This assumption indicates that the clothing worn by the site worker prevents direct contact of the rest of the body with soil. However, EPA's "Dermal Exposure Assessment: Principles and Applications" indicates that soil may reach skin under clothing (EPA 1992). Therefore, EPA Region 9 recommends using a skin surface area of 3,300 square centimeters (cm²) (the value of 1,661 cm² is used in the on-site soil risk assessment). Exhibit 2 should be revised to use a skin surface area of 3,300 cm².
4. Exhibit 2 uses an inhalation rate of 15 cubic meters per day (m³/day) to convert an inhalation slope factor to a unit risk factor. However, EPA's Health Effects Assessment Summary Tables (HEAST) and EPA's Integrated Risk Information System (IRIS) indicate that this conversion should be done using an inhalation rate of 20 m³/day (EPA 1997a and 2001). Exhibit 2 should be revised accordingly.
5. Exhibit 2 uses a target risk of 1 in 100,000 (1E-05) for the trespasser. This target risk is not acceptable. The target risk for the trespasser should be 1E-06, the low end of EPA's risk range and to be protective regarding cumulative exposure to multiple contaminants (EPA 1990).

SPECIFIC COMMENTS ON EXHIBIT 3

1. Exhibit 3 states that "hypothetically, trespassers might also access the property [including the Landfill Tributary], although this is extremely unlikely due to the presence of high fences and a guard station." This statement is misleading. The perimeter of most of the AK Steel facility property is indeed surrounded by a fence and is in sight of guard stations. However, access to the

Landfill Tributary from Dick's Creek is not limited in any way. There is no fence prohibiting access to the Landfill Tributary from Dick's Creek, nor are fences present along the west side of the OMS Operations area. Therefore, trespassers can freely access the Landfill Tributary from Dick's Creek and the OMS Operations area from the tributary. Exhibit 3 should be revised accordingly.

2. Exhibit 3 states that "it is assumed that there is an equal likelihood that site workers and hypothetical trespassers contact sediment and surface water in Monroe Ditch [also known as the Landfill Tributary], the drainage swales on the west side of closed landfill #1, discharge channels associated with outfalls 002 and 003, and polishing and settling ponds associated with these landfills." This assumption is faulty. Site workers are less likely to be exposed in Monroe Ditch than in on-site surface water bodies such as the polishing and settling ponds. In contrast, trespassers are much more likely to be exposed in Monroe Ditch than in the polishing and settling ponds. As stated elsewhere in Exhibit 3, the highest contaminant concentrations are present in Monroe Ditch. Therefore, because of the use of contaminant concentrations averaged across all on-site surface water bodies in Exhibit 3, the contaminant concentrations to which site workers may be exposed are overestimated, and the contaminant concentrations to which trespassers may be exposed are underestimated. Exhibit 3 should be revised to calculate separate exposure point concentrations for Monroe Ditch, the drainage swales, and the rest of the on-site surface water bodies.

REFERENCES

- ARCADIS Geraghty & Miller (AGM). 1999. "Monroe Ditch Investigation, First Interim Report, AK Steel Property, Monroe Ditch Area, Middletown, Ohio." July 15.
- AGM. 2001. "Soil and Groundwater Investigation Plan, Olympic Mills Service Operations Area, AK Steel Property, Middletown, Ohio." March 16.
- Anderson, A.C., and J.C. Rice. 1992. "A Survey of Fish and Shellfish Consumption by Residents of the Greater New Orleans Area." March.
- City of Middletown. 2000. City of Middletown, Ohio, Profile. Accessed on September 14. On-Line Address: www.ci.middletown.oh.us/images/d01x01d.gif
- Fishery Information Management Systems, Inc. (FIMS), and Department of Fisheries and Allied Aquacultures (FAA). 1994. "Estimation of Daily Per Capita Freshwater Fish Consumption of Alabama Anglers."
- Jacobs, H.L., H.D. Kahn, K.A. Stalka, and D.B. Phan. 1998. "Estimates of Per Capita Fish Consumption in the U.S. Based on the Continuing Survey of Food Intake by Individuals (CSFII)." *Risk Analysis*. Volume 18, Number 3. Pages 283 through 291.
- Roy, T.A., J.J. Yang, A.J. Krueger, and C.R. Mackerer. 1990. "Percutaneous Absorption of Neat 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) and TCDD Sorbed on Soils." *The Toxicologist*. Volume 10, Number 1. Page 308.

- Stern, A.H., L.R. Korn and B.E. Ruppel. 1996. "Estimation of Fish Consumption and Methylmercury Intake in the New Jersey Population." *Journal of Exposure Analysis and Environmental Epidemiology*. Volume 6, Number 4. Pages 503 through 527.
- Tetra Tech EM Inc. (Tetra Tech). 1998. Records of Personal Communication and E-Mail Correspondence Regarding Dermal Absorption Factors, Dermal Adherence, and Gastrointestinal Absorption Efficiencies. Between Eric Morton and Kris Kruk, Environmental Scientists, and Mark Johnson, Risk Assessor, U.S. Environmental Protection Agency (EPA) Region 5 Dermal Work Group.
- Tetra Tech. 2000. "Human Health Risk Assessment, Dick's Creek and Tributaries, AK Steel, Middletown Works, Facility, Middletown, Ohio." Draft. November 17.
- U.S. Environmental Protection Agency (EPA). 1985. "Method 680: Determination of Pesticides and PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry." November.
- EPA. 1989a. "Assessing Human Health Risks from Chemically Contaminated Fish and Shellfish." Office of Marine and Estuarine Protection. EPA-503/8-89-002. September.
- EPA. 1989b. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A)" (RAGS). Interim Final. Office of Emergency and Remedial Response. Washington, DC. EPA/540/1-89/002. December.
- EPA. 1990. "National Oil and Hazardous Substances Pollution Contingency Plan." *Federal Register*. Volume 55, Number 46. April 9.
- EPA. 1991. "RAGS, Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors." Interim Final. Office of Solid Waste and Emergency Response (OSWER) Directive 9285.6-03. March 25.
- EPA. 1992. "Dermal Exposure Assessment: Principles and Applications." Interim Report. Office of Health and Environmental Assessment. EPA/600/8-91/0113. January.
- EPA. 1996. "Method 8082: Polychlorinated Biphenyls by Gas Chromatography." From "Test Methods for Evaluating Solid Waste, Volumes IA through IC, SW-846, Third Edition. Updates I, II, IIA, IIB, and III." Office of Solid Waste and Emergency Response (OSWER). Washington, DC. December.
- EPA. 1997a. "Health Effects Assessment Summary Tables, FY 1997 Update." OSWER. EPA-540-R-97-036. July.
- EPA. 1997b. "Exposure Factors Handbook, Volumes I through III." Office of Research and Development. EPA/600/P-95/002Fa, -Fb, and -Fc. August.
- EPA. 2000a. Memorandum Regarding May 10, 2000, Site Visit to AK Steel, Middletown Works, Facility in Middletown, Ohio, EPA ID No. OHD 004 234 480. Freedom of Information Act-Exempt/Attorney-Client Privilege, Prepared in Anticipation of Litigation. From Michael J.

Mikulka, Environmental Engineer, and Lisa Geist, Ecologist. To Robert Guenther, Assistant Regional Counsel. May 23.

EPA. 2000b. Administrative Order Pursuant to Section 7003(a) of Resource Conservation and Recovery Act, 42 *United States Code* Section 6973(a), for AK Steel, Middletown Works, Facility at 1801 Crawford Avenue in Middletown, Ohio, EPA ID No. OHD 004 234 480. Docket No. R7003-5-00-002. August 17.

EPA. 2000c. "Region 9 PRGs Table 2000 Update." November 3. Accessed on June 25, 2001. On-Line Address: www.epa.gov/region09/waste/sfund/prg/whatsnew.htm

EPA. 2001. Integrated Risk Information System (IRIS). Accessed on June 20. On-Line Address: <http://www.epa.gov/ngispgm3/iris/index.html>.

West, P.C., J.M. Fly, R. Marans, F. Larkin, and D. Rosenblatt. 1993. "1991-92 Michigan Sport Anglers Fish Consumption Study." Prepared by University of Michigan, School of Natural Resources, for Michigan Department of Natural Resources, Ann Arbor, Michigan. Technical Report No. 6. May. As Cited in EPA 1997.

ENCLOSURE 2

TECHNICAL REVIEW COMMENTS ON EXHIBIT 4

(Six Pages)

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TECHNICAL REVIEW COMMENTS ON EXHIBIT 4

General and specific technical review comments on Exhibit 4 are presented below. References used to prepare the comments are listed after the comments.

GENERAL COMMENT

The ecological risk assessment (ERA) for Dick's Creek follows the generic ERA framework recommended by U.S. Environmental Protection Agency (EPA) guidance. However, the analyses and conclusions of the ERA are seriously flawed. Specifically, the ERA misrepresents both past and current conditions in Dick's Creek through (1) superficial comparisons to the peer-reviewed literature, (2) flawed assumptions and sampling methods, (3) simplistic determinations of ecological risk and food chain relationships, (4) lack of adequate site-specific data, and (5) data of questionable quality. These weaknesses are documented in the specific comments below with reference to evidence of substantial ecological hazards and risks in the study area. These hazards and risks are related to exposures to sediments contaminated with organic chemicals. These chemicals have been linked to seeps from AK Steel operations adjacent to Dick's Creek.

SPECIFIC COMMENTS

1. The work plan for the ERA is still a draft and has not been approved by EPA, yet the ERA was submitted. The ERA does not address previous comments from EPA that raise serious concerns about the technical methods used to evaluate ecological risk. It is imperative that the ERA be revised to address EPA's comments on the methods used to prepare the ERA.
2. There are discrepancies in the data used in the ERA, calling into question the quality of the data and whether the data limitations undermine their use in the risk assessment. Also, the data used results in underestimation of exposure for aquatic and benthic receptors and for wildlife ingesting surface water and sediment. Examples of these problems are presented below.
 - ARCADIS Geraghty & Miller (AGM) reports that surface water concentrations of polychlorinated biphenyls (PCB) were determined using filtered samples. Both particulate and dissolved PCBs sorb to any filter, reducing PCB concentrations to nondetectable levels. The sampling procedure resulted in lowered estimates of PCB exposures.
 - AGM selectively used PCB data, resulting in lowered estimates of exposures. For example, chemical data collected by EPA and Wright State University (WSU), indicating higher PCB concentrations was not used in the ERA. The data was collected using EPA-approved procedures and in accordance with quality assurance/quality control (QA/QC) protocols, so there is no basis for the data's omission.
 - There are some significant discrepancies between PCB concentrations reported by AGM and those reported by the EPA, the Ohio Environmental Protection Agency (OEPA), and WSU. Although lower water concentrations may be explained by AGM's water sample filtering, this is not the case with sediment samples. For example, for a 1999 sediment sample split with OEPA, the analytical report from Test America, Inc., the laboratory used by AK Steel Corporation (AK Steel), reported the sample concentration as a

nondetect, whereas the analysis of OEPA's split sample revealed a concentration of greater than 700 micrograms per kilogram. Additionally, a Test America, Inc., memorandum stated that a concentration reported for Aroclor 1016 (about 300 parts per billion [ppb]) was likely for Aroclor 1242. This example and the consistently low PCB values in the data used by AGM raise questions about AK Steel data quality and its laboratory's chromatograph interpretations.

Exhibit 4 must be revised to resolve and eliminate these discrepancies; all conclusions should be revised appropriately.

3. Multiple lines of evidence about the potential ecological risks of contamination in Dick's Creek have been collected for several years by AK Steel, EPA, OEPA, and WSU. However, the ERA ignores the wealth of quality data. Given the complexity of any risk assessment and the high levels of uncertainty associated with use of assumptions (which are numerous in the ERA), it is essential that all relevant data be considered and that the weight-of-evidence (WOE) process be clearly defined and used in the risk characterization process. Currently, the ERA does not do this; rather, it relies on a limited data set and excessive use of tenuous assumptions. For example, the ERA often uses one literature value when the literature values range by orders of magnitude for (1) gross energy calculations, (2) assimilation efficiencies, (3) metabolic rates, (4) sediment ingestion rates, (5) diet, (6) water ingestion rates, (7) body weights, and (8) area use factors. Each of these has a high level of uncertainty. Thus, when selectively chosen literature values for these items are used in combination to generate exposure estimates, the estimates bear little items or no resemblance to reality. Risk characterization results based on these types of assumptions must be validated using empirical, site-specific information. In addition, the ERA relies on benthic and fish survey data and limited fish tissue data to evaluate ecological effects, and the interpretation of effects is seriously flawed (see the specific comments below). *The lack of empirical site data to support gross risk predictions is a serious flaw in the ERA.* Refer to the AquaQual Services, Inc., (AquaQual) ERA (2001) for risk characterization using a WOE approach.
4. Chemical concentrations should be related to an appropriate "near field" reference site. Use of national or regional background values is ecologically irrelevant because background concentrations of organic chemicals are zero (or close to zero for anthropogenic background concentrations).
5. Concentrations of metals, polynuclear aromatic hydrocarbons (PAH) and pesticides (including "new age" pesticides) should be better evaluated for risk by means of monitoring and WOE analyses. Pesticides have been found in fish in Dick's Creek. One cannot determine the role of AK Steel-related stressors without knowing the exposure of Dick's Creek organisms to other stressors. It is certainly in AK Steel's best interests to know to what extent site stressors are originating from non-AK Steel sources.
6. Surface sediment is not defined in terms of the depth sampled or the depth considered for risk. This information should be presented because sediment probably provides the primary route of impact.
7. Fish filet data should also be considered, if available, even though it would result in underestimation of risk because piscivorous wildlife eat whole fish. Filet data is superior to literature-based assumptions.

8. Clarification should be provided regarding which fish tissue samples were used for exposure determinations. The ERA should specify (1) whether these samples were from one species and whether they were from males or females, (2) the size of the fish sampled, and (3) the time of year when sampling was conducted. There is clear EPA guidance discussing the importance of these factors in determining fish tissue concentrations.
9. Excluding data collected prior to installation of the groundwater interceptor trench is inappropriate because such data is still representative of in-place contamination resulting from releases before the trench was constructed. PCBs do not break down in sediment and will stay in the environment for many decades. Fish contaminated with PCBs can live for years; therefore, contaminated fish could still be present in the ecosystem. Earlier contamination is still affecting present-day organisms, and data on this contamination helps establish trends and affects hazard, risk, and source determinations. Exhibit 4 must be revised to consider and incorporate data collected prior to the installation of the groundwater interceptor trench.
10. Relatively small streams like Dick's Creek that drain large watersheds containing impervious areas are very dynamic, rising to high levels with associated high power during multiple rain events each year. This causes movement of sediment and soil from the stream, stream banks, and surrounding areas within and outside the flood plain. Exposures of aquatic organisms and wildlife near the stream to contaminated stream banks and surrounding areas that are flooded are ignored in the ERA. Similarly, the substantial risk posed by Monroe Ditch (also known as Landfill Tributary) is ignored. Because the ERA ignores these fate and transport pathways, the determination of ecological risks is incomplete and inaccurate.
11. Upwelling groundwaters have been documented but are not considered in evaluations of benthic organism exposures. If an organism has a population or community that is enveloped by upwelling groundwater for extended periods and has periodic exposures to storm waters, the effects of stressors associated with these two media cannot be ignored. The ERA should be revised to consider potential exposure by ecological receptors to contaminants in upwelling groundwater.
12. The risks to benthic invertebrates and to organisms that ingest them are poorly defined. Benthic invertebrates are likely the most important receptor group as they have the greatest exposure and provide the key link to contamination of the higher trophic levels. The ERA must be revised to better define and document risks to benthic invertebrates.
13. Photoinduced toxicity from PAHs is not addressed in the ERA but is likely occurring in Dick's Creek ecosystem based on observed concentrations and comparisons to the peer-reviewed literature. PAHs at the part per trillion level that have been measured in Dick's Creek surface water pose a substantial risk to fish larvae and the early life stages of amphibians via photoinduced toxicity. This phenomenon is well documented in the literature and should be addressed in the ERA.
14. Arguments by AGM against the use of consensus-based sediment quality guidelines (SQG) (for example, MacDonald and others 2000) are baseless and do not agree with the consensus in the scientific literature. SQGs are one line of evidence in the WOE approach and should be used in the ERA. They are superior to the equilibrium partitioning (EqP) approach because they have been biologically validated at hundreds of sites. Comparisons of site-specific data (using AGM,

EPA, OEPA, or WSU data) to accepted SQGs show that exceedances of threshold effect levels (adverse effects) are occurring in Dick's Creek by orders of magnitude in some cases. *This line of evidence suggests that benthic organisms are adversely affected by PCB-contaminated sediment in Dick's Creek.*

15. Prediction of sediment exposures based on a derived PCB water quality benchmark that has many associated, tenuous assumptions is inadvisable when superior approaches exist. *The ERA should simply document actual exposures and adverse effects in Dick's Creek.* This approach would result in greatly reduced uncertainty and in sound conclusions based on straightforward data interpretations.
16. Comparisons involving laboratory spiked sediment data in the ERA are tenuous. The spiked sediment did not resemble site sediment, the bioavailability of the chemicals would undoubtedly be different, and the approach ignores other stressors and alters exposure profiles. In addition, adverse effect levels are based on comparisons involving marine species that are less sensitive than relevant freshwater organisms in Dick's Creek. Exhibit 4 must be revised to assess the limitations associated with the comparisons to laboratory spiked sediment data.
17. The ERA has few comparisons to the peer-reviewed literature regarding PCB exposure effect levels. There is a wealth of useful information pertaining to EPA's Hudson River PCB assessment, which is easily accessible on the world wide web. This study's aquatic biota and wildlife values should be considered along with others from the peer-reviewed literature.
18. Food chain relationships used to characterize exposures for upper trophic level receptors are superficially addressed in the work plan conceptual model but not in the ERA. The fact that fish are eating contaminated invertebrates and that birds and other wildlife are eating contaminated fish is not discussed. The AquaQual ERA (2001) documents severe risks to wildlife from the lower part of the food chain using a range of assumptions about ingestion. The ERA must be revised to more completely characterize and consider food chain relationships in estimating exposures for upper trophic level receptors.
19. There are multiple ways to assess bioaccumulation for food chain risk assessments, such as bioaccumulation models, bioconcentration factors, bioaccumulation factors, and biota-sediment accumulation factors (BSAF). For these various approaches, different PCB uptake values have been reported in the peer-reviewed literature, so predictions of uptake may vary by orders of magnitude. It is critical that an ERA evaluate which models and which assumptions are optimal and most accurate. The AGM ERA does not do so. The AquaQual ERA (2001) evaluates uptake and effects based on field data and thereby selects the optimal model for prediction of risk in the higher food chain (for example, birds). There is no strong scientific evidence to support any of the risk predictions in the AGM ERA. It is simplistic to use average relative (or single-value) rates of ingestion, because they vary widely and have a large impact on risk predictions. A range of values should be used to reflect the real uncertainty that exists without empirical data. *There is no justifiable, scientifically based rationale for using the current ERA approach when far superior approaches exist.*
20. The ERA should explain why the mink was used as a receptor. There is no evidence that it exists in the study area.

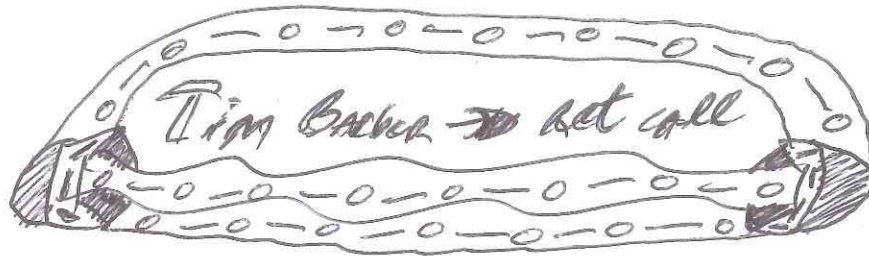
21. The ERA should explain why the sandpiper was used as a receptor. There is no evidence that it exists in the study area. Also, dabbling ducks such as mallards have been reported to take up to 60 percent sediment, whereas values of 18 percent are used for the sandpiper and mallard in the ERA.
22. The EqP approach used to assess exposure for benthic invertebrates erroneously assumes that all uptake is from pore water and does not account for exposure through ingestion of contaminated sediment. This has been well documented in the peer-reviewed literature. The ERA should be revised to replace the EqP approach with comparison to consensus-based SQGs (for example, MacDonald and others 2000).
23. It is well established in the literature that adverse effect levels can occur in multiple species of fish with PCB concentrations below 25 mg/kg, which is the value chosen by AGM. For example, refer to multiple citations in EPA's Hudson River PCB assessment. The ERA should be revised accordingly.
24. The toxic effect values chosen by AGM for PCB effects on birds are too limited, and the literature documents adverse effects at much lower concentrations. The ERA should be revised accordingly.
25. The statements regarding PCB homologue compositions and PAH fingerprints that are related or unrelated to AK Steel need further explanation. For example, the ERA should discuss whether AK Steel has characterized all the PCB seeps and PAH sources occurring throughout the study area.
26. The statements regarding lack of benthic species toxicity (see page 56 of the ERA) with only chronic toxicity to the most sensitive species are unfounded. WSU routinely observed acute toxicity (mortality) to both sensitive and relatively insensitive (midge, oligochaete) species. The ERA is not consistent with OEPA benthic surveys. These surveys show communities that reflect a "toxic" imprint, particularly with the dominance throughout the study area of a tolerant midge species, *Cricotopus bicinetus*. The ERA should be revised to modify statements regarding the apparent lack of benthic species toxicity based on the above discussion.
27. The magnitude of the habitat stress in the study area is misrepresented in the ERA. Although the habitat is a stressor in one part of the study area if one compares it to a pristine location, the habitat has been proven not to be the dominant stressor using a WOE approach (see the AquaQual ERA [2001] and OEPA surveys). The OEPA modified warm water habitat criteria were developed based on biological data for channelized agricultural streams in Ohio. *The habitat factor has been removed* from these criteria because biological communities in channelized agricultural streams will never be as high in quality as at pristine sites. If a comparison is to be made to habitat effects, it should be made using OEPA's unmodified warm water criteria. Urban and industrial channelized streams, however, have additional stressors that agricultural streams do not. In addition, problems with using artificial substrates (such as Hester Dendy's) should be recognized, as they remove benthic organisms from contact with contaminated sediments; because these substrates reduce sediment exposure, effects are likely underestimated. These substrates also allow colonization by organisms that have drifted from upstream, off-site areas. Therefore, the ERA conclusions regarding the reasonable quality of benthic and fish communities are incorrect. The benthic and fish communities have shown improvement from poor to marginal status but are still adversely affected, showing a "toxic

signature" (refer to the toxicity, bioaccumulation, and modeling studies reported in the AquaQual ERA). The ERA's discussion regarding the magnitude of the habitat's stress in the study area must be revised accordingly.

28. The high level of benthic macroinvertebrate tissue contamination that has been recently observed poses a substantial risk to the higher food chain, as documented in the AquaQual ERA (2001). The AGM ERA ignores bioaccumulation potential and food chain transfer, which simply cannot be done with PCBs. As one example, AquaQual established which bioaccumulation model was valid for benthic invertebrates using site-specific tissue data; uptake was then modeled through the food chain, and the Belted Kingfisher was found to be at risk (a hazard quotient of 1 was exceeded) based on multiple food consumption exposure scenarios. The ERA must be revised to consider the bioaccumulation potential of and food chain transfer of PCBs.
29. ERA statements regarding the likelihood of "subadditive" toxicity are incorrect. It is well documented that additivity dominates, yet numerous recent, peer-reviewed studies show that widespread synergistic (greater than predicted) effects commonly exist when multiple organic chemicals are present. There is a possibility that this is occurring in Dick's Creek, particularly when photoinduced toxicity of PAHs is considered. The ERA should be revised to discuss the impact of photoinduced toxicity of PAHs.
30. The ERA conclusion that "toxicity to individual invertebrates is possible on a very limited spatial scale" is unclear and should be explained in detail. Moreover, it appears that AGM considers such toxicity to be acceptable. WSU has documented acute toxicity throughout the study area that appears to pose severe ecological risks.
31. Based on the comments presented above, all four summary conclusions of the ERA are unfounded.

REFERENCES

- AquaQual Services, Inc. 2001. "Ecological Risk Assessment of Dick's Creek, Middletown, Ohio." Prepared for U.S. Environmental Protection Agency Region 5.
- MacDonald, D.D., L.M. Dipinto, J. Field, C.G. Ingersoll, E.R. Long, and R.C. Swartz. 2000. "Development and Evaluation of Consensus-based Sediment Effect Concentrations for Polychlorinated Biphenyls." *Environmental Toxicology and Chemistry*. Volume 19. Pages 1403 through 1413.



June 27, 2001

Mr. Allen Wojtas
Work Assignment Manager
Enforcement and Compliance Assurance Branch
Waste, Pesticides and Toxics Division (DE-9J)
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Technical Review Comments on AK Steel Corporation's
"Motion for an Injunction Under the All Writs Act
(Expedited Ruling Requested)" and Exhibits 1, 2, 3, and 4
Contract No. 68-W9-9018, Work Assignment No. R0580524**

Dear Mr. Wojtas:

As directed by Mr. Gary Cygan, the U.S. Environmental Protection Agency (EPA) technical contact and project manager, and Mr. Michael Mikulka, the EPA technical advisor, Tetra Tech EM Inc. (Tetra Tech) and its subcontractor, AquaQual Services, Inc. (AquaQual), technically reviewed AK Steel Corporation's (AK Steel) "Motion for an Injunction Under the All Writs Act (Expedited Ruling Requested)" (the motion) and Exhibits 1 through 4 of the motion. All the exhibits were prepared by ARCADIS Geraghty & Miller for AK Steel and are identified below.

- Exhibit 1: "Human Health Risk Assessment"
- Exhibit 2: "Evaluation of Potential Risks Associated with On-Site Soils"
- Exhibit 3: "Evaluation of Potential Risks Associated with On-Site Sediment and Surface Water"
- Exhibit 4: "Ecological Risk Assessment for Dick's Creek" *and*

Final

The exhibits were reviewed to assess their technical adequacy and consistency with the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" dated January 16, 2001, and the technical review comments included in EPA's April 11, 2001, letter ~~disapproving this work plan~~. Also, the exhibits were compared to (1) the draft "Human Health Risk Assessment, Dick's Creek and Tributaries, AK Steel, Middletown Works, Facility, Middletown, Ohio" prepared by Tetra Tech and dated November 17, 2000; (2) the "Draft Ecological Risk Assessment for Dick's Creek" prepared by AquaQual and dated April 30, 2001; (3) any available facility data; and (4) the open, peer-reviewed scientific literature. Tetra Tech assumed primary review responsibility for Exhibits 1 through 3, and Dr. G. Allen Burton, the president of AquaQual, was the primary reviewer for Exhibit 4. Exhibits 1 through 3 are all human health

WHY MENTION THE WP WE THOUGHT WAS SHOT?

AK5 038702

Mr. Allen Wojtas
June 27, 2001
Page 1

risk assessments, and Exhibit 4 is an ecological risk assessment. Therefore, comments on Exhibits 1 through 3 are presented in Enclosure 1 of this letter, and comments on Exhibit 4 are presented in Enclosure 2.

If you have any questions regarding the comments prepared by Tetra Tech or AquaQual, please call me or Eric Morton at (312) 856-8700.

Sincerely,

Mary Wojciechowski
Project Manager

Enclosures (2)

cc: Bernie Orenstein, EPA Regional Project Officer (letter only)
Gary Cygan, EPA Technical Contact and Project Manager
Michael Mikulka, EPA Technical Advisor
Ed Schuessler, Tetra Tech Regional Manager (letter only)
Art Glazer, Tetra Tech Program Manager
Eric Morton, Tetra Tech Site Manager

AK5 038703

ENCLOSURE 1

TECHNICAL REVIEW COMMENTS ON EXHIBITS 1 THROUGH 3

(Nine Pages)

AK5 038704

TECHNICAL REVIEW COMMENTS ON EXHIBITS 1 THROUGH 3

General and specific technical review comments on Exhibits 1 through 3 are presented below. To the extent that specific comments are related to multiple exhibits, this fact is noted in the comments rather than presenting the same or similar comments multiple times. References used to prepare the comments on Exhibits 1 through 3 are listed after the comments.

GENERAL COMMENT

IS THIS DATA RELEVANT?
source is
Exhibit 1 does not consider two key sources of investigative data. The first surface water and sediment samples collected from the Landfill Tributary and Dick's Creek by the U.S. Environmental Protection Agency (EPA) after installation of the trench system in 1998. The second source is data for surface water and sediment samples collected by Wright State University (WSU) researchers after installation of the trench system. Sediment in the landfill tributary and Dick's Creek must be considered a heterogeneous medium. Therefore, to be complete and appropriately conservative, it is necessary to include and examine all available data in the risk assessment. Moreover, in some instances, the EPA and WSU data indicated higher contaminant concentrations than were used in the risk assessment. Without consideration of the EPA and WSU data, Exhibit 1 must be considered incomplete and may underestimate the potential risk to human health.

SPECIFIC COMMENTS ON EXHIBIT 1

AK HAVE WSU DATA?
DOES IT
In Section 2.1, the text states that AK Steel Corporation (AK Steel) "owns the land surrounding and underlying those portions of Dick's Creek between river mile 2.5 and 5.6." This statement is inaccurate. The Miami Conservancy District (MCD) owns the land immediately adjacent to Dick's Creek and along its length and is responsible for its maintenance (EPA 2000a). Therefore, persons walking along and through Dick's Creek are on public lands and are not trespassing. Section 2.1 should be revised accordingly.

NOTE - BOTH SPEC PERMITS SHOW LOW CONCENTRATIONS OF PCBs
Section 2.3 discusses previous investigative and remedial activities at the facility and suggests that the only source of polychlorinated biphenyls (PCB) is the OMS Operations area, also known as the slag processing area. However, as discussed in EPA's draft human health risk assessment (HHRA) for Dick's Creek, several other potential source areas exist (Tetra Tech EM Inc. [Tetra Tech] 2000). Evidence of these potential source areas is summarized below.

A report prepared by ARCADIS Geraghty & Miller (AGM) in 1999 summarizes (1) detection of PCBs in seeps originating along the east bank of the Landfill Tributary (referred to in the AGM report as Monroe Ditch), (2) design and installation of trench collection systems to capture seeps flowing into the Landfill Tributary, and (3) the results of a multimedia investigation conducted to determine the probable sources of the PCB contamination detected in the seeps. The report notes that PCBs were detected in sediment at three locations in Dick's Creek: 200 feet upstream of the confluence of the Landfill Tributary and Dick's Creek, at Yankee Road about 200 feet downstream of this confluence, and at Main Street about 1.5 miles downstream of the AK Steel facility. The PCBs downstream of the confluence of the Landfill Tributary and Dick's Creek are attributed to discharge from the Landfill Tributary. However, the AGM report concludes that the homologue data is "inconclusive as to a single source at the most upstream occurrence of PCBs in Dick's Creek." This statement suggests that one or more sources other than the Landfill Tributary are responsible for the PCB contamination in Dick's Creek.

Also, during a site visit in May 2000, EPA observed two locations of possible new seeps flowing into the Landfill Tributary. EPA's observations are summarized below.

- Just upstream of the point where the Landfill Tributary bends to the east (about 800 feet upstream from Dick's Creek), water was observed seeping into the tributary from the southwest bank. EPA noted that "this appears to be a new seep which has not been sampled or identified previously" (EPA 2000a).
- At the downstream end of a culvert in the Landfill Tributary about 1,350 feet upstream from Dick's Creek, a white or grey area was noted along the west bank. EPA noted that this "could indicate another possible point of seepage" (EPA 2000a).

These potential seeps were both observed along the west bank of the Landfill Tributary and are unlikely to be associated with potential source areas located east of the tributary in the slag processing area.

It is clear that potential source areas other than the slag processing area may be contributing to PCB contamination in Dick's Creek. These source areas may include the location of historical releases from AK Steel outfalls and from AK Steel landfills located west of the Landfill Tributary.

3. Section 2.4 discusses the migration and exposure pathways considered in Exhibit 1. The text states that "groundwater derived from aquifers other than the perched groundwater zone also is not a complete exposure pathway." This conclusion is not supported by available data as discussed below.

Exhibit 1 is partially based on the assumption that silt and clay till prevent vertical migration of PCBs from the perched groundwater zone to the upper aquifer, intermediate aquifer, and lower aquifer. However, the SGIP states that "the upper silt and clay are so thin or discontinuous that they do not form a perching surface." This statement indicates that in some areas, the silt and clay hydrostratigraphic unit does not act as a true confining layer and may allow vertical migration of PCBs into the upper aquifer. In addition, this statement contradicts AK Steel's claim that the intermediate and lower aquifers do not exist in the area of interest for Exhibit 1. If the intermediate and lower aquifers actually do not exist in the area of interest, PCB transport into these units is not an issue. However, AK Steel has not provided adequate information to allow a determination of whether the intermediate and lower aquifers are present in the west portion of the buried valley. The SGIP text does not adequately address this issue, and cross-sections provided in the SGIP terminate at least 20 feet above bedrock.

Exhibit 1 indicates that only one groundwater sample collected from an upper aquifer well (MDA-085) contained PCBs during sampling performed in June and July 1998. According to the SGIP, this assertion is incorrect. SGIP Figure 7, "PCB Concentrations in Upper Aquifer Groundwater," indicates that PCBs were also detected in upper aquifer well GM-35 S at a concentration of 0.58 micrograms per liter ($\mu\text{g/L}$); the figure does note that this was an estimated concentration. Exhibit 1 also states that PCBs have not been detected since 1998 in any groundwater monitoring wells installed in aquifers other than the perched zone, and Figure 7 indicates that no PCBs were detected in wells sampled in August and September 2000. However, wells MDA02S, MDA18S, MDA16S, and GM-30S were not sampled during this sampling event.

PCBs continue to be encountered in the perched zone, and AK Steel has not adequately demonstrated that the perched zone is hydraulically isolated from the upper, intermediate, and lower aquifers. In fact, the SGIP states that "if vertical flow occurs, only dissolved-phase PCBs would be expected to reach the upper aquifer because the upper silt and clay layer would act as a filter barrier for PCBs sorbed onto soil particles." This statement is accurate based on current knowledge of the nature and extent of the silt and clay hydrostratigraphic unit and indicates that vertical migration is possible between the perched zone and upper aquifer. PCBs have historically been detected in the upper aquifer, indicating a hydraulic connection between the perched zone and upper aquifer. Therefore, further investigation is warranted to determine the relationship between the perched zone and upper aquifer and the extent of PCB contamination in the upper aquifer.

Accordingly, exposure to groundwater derived from aquifers other than the perched groundwater zone may be a complete exposure pathway. Insufficient data is currently available to evaluate this pathway. Exhibit 1 should be revised to acknowledge this limitation and to retain the option of evaluating this pathway in the future.

4. As noted in specific comment 2 above, potential sources other than groundwater seeps that previously flowed into the Landfill Tributary may have contributed PCBs and other contaminants to Dick's Creek. Therefore, Section 2.4 should be revised to acknowledge these additional potential sources, which may include releases from other areas of AK Steel operations such as historical releases from AK Steel outfalls.

5. Section 3.1 states that Table 3-1 identifies all data sets evaluated for Exhibit 1. Table 3-1 does not list any EPA or WSU data sets. As noted in the general comment above, in some instances the EPA and WSU data sets contain contaminant-specific concentrations greater than those in the data sets evaluated for Exhibit 1. Without considering the EPA and WSU data sets, Exhibit 1 must be considered incomplete and may underestimate the potential human health risks.

6. *Does it?*
Although EPA acknowledges that the PCB homologue method (EPA Method 680) provides more definitive identification of individual PCBs than Aroclor-based methods (such as EPA Method 8082), EPA does not agree that the homologue method provides more accurate quantitation of total PCB concentrations (EPA 1985, 1996). Method performance studies indicate that PCB congeners are recovered less well from environmental matrices than Aroclor mixtures. As stated in EPA Method 8082, "recoveries of congeners from environmental reference materials ranged from 51 to 66 percent of the certified Aroclor values" and "recoveries of congeners from soils spiked with Aroclor-1254 and Aroclor-1260 were between 80 and 90 percent" (EPA 1996). Therefore, total PCB values calculated by summing congener results are likely to be biased low, and risks calculated using such values may be underestimated.

In addition, the risk assessment methodology used by Tetra Tech for EPA's draft HHRA for Dick's Creek calculated risks separately based on Aroclor and PCB congener concentrations (Tetra Tech 2000). In the draft HHRA, the risks based on congener concentrations are less than those based on Aroclor concentrations. It is EPA's position that analytical methods should be selected by considering the regulatory requirements for the intended use of the data. Rather than replacing the Aroclor data with homologue data, Exhibit 1 should use both types of data and compare the risk results.

7. Section 4.2 states that "with regard to exposure to potentially impacted surface water and

sediment, there is no evidence that people access the creek consistently at specific points." This statement is inaccurate. For example, people have regularly been observed congregating beneath the railroad bridge east of Yankee Road. Similarly, children from Amanda Elementary School have frequently been observed playing in and along Dick's Creek at a point just west of the school. Finally, worn paths have been observed to originate from paths adjacent to Dick's Creek and to extend to the water's edge. Clearly, human receptors do frequent particular locations in and along Dick's Creek, and particular human receptors are likely to frequent particular stretches of Dick's Creek more often than others.

Also, EPA guidance suggests that exposure areas should be based on receptor activity patterns such as those discussed above and on contaminant distribution (EPA 1989b). Based on available sample analytical results, contaminant concentrations are not distributed evenly throughout Dick's Creek. By averaging contaminant concentrations throughout the length of Dick's Creek, Exhibit 1 may underestimate risks for individual receptors.

8. As stated in Section 4.4.4, Exhibit 1 incorporates a fraction ingested term for evaluating potential exposure to contaminants in sediment through incidental ingestion. As stated in the technical review comments included in EPA's April 11, 2001, letter disapproving ~~the~~ risk assessment work plan, the application of a fraction ingested value of 0.5 for the sediment ingested from source term is not acceptable. The current sediment ingestion data to which this term is applied does not include information regarding the timing (that is, event-driven or continuous) of the sediment ingestion relative to the time spent in a given activity. Therefore, the exposures and risks associated with incidental sediment ingestion should be revised to remove the fraction ingested term.

9. The fish consumption rate and fraction fish ingested from the source are discussed in Sections 4.4.8 and 4.4.9, respectively. The reasonable maximum exposure (RME) fish consumption rate used in Exhibit 1 is 5.25 grams per day (g/day). This value represents the 90 percent upper confidence limit (90% UCL) on the mean of daily average per capita estimates of freshwater and estuarine finfish and shellfish consumption rates for the general population (Jacobs and others 1998). The use of fish consumption rates based on the general population does not adequately represent potential Dick's Creek anglers. In general, EPA notes that "local or regional assessments of fish/shellfish consumption should be performed whenever possible to avoid possible errors inherent in extrapolating standard values for the U.S. population to distinct subpopulations" and "national averages . . . are not predictive of all subgroups and regions on a scale fine enough to address local situations of potential concern" (EPA 1989a).

A significant low-income population is present in Middletown, Ohio. Specifically, about 15 percent of Middletown households have incomes at or below the poverty level (City of Middletown 2000). Individuals from these households may be more likely than the general population to ingest fish species that are not valued for recreational fishing. Exhibit 1 notes that several studies that "failed to show a relationship between low incomes and high rates of consumption of self-caught fish." However, other studies indicate that there may be a relationship between lower annual incomes and a greater fish consumption rate. For example, a study of Michigan sport angler fish consumption indicates that anglers with annual incomes of less than \$15,000 ingested about 50 percent more fish than anglers with annual incomes of more than \$40,000 (West and others 1993). Also, studies of anglers in Louisiana and Alabama suggest that persons with lower annual incomes may ingest more self-caught fish than persons with higher annual incomes (Anderson and Rice 1992; FIMS and FAA 19xx).

Therefore, fish consumption by low-income human receptors in the Middletown area may be higher than the RME fish consumption rate of 5.25 g/day used in Exhibit 1. Table 10-67 in EPA's "Exposure Factors Handbook" notes that the mean sport fish consumption for Michigan residents with annual incomes of less than \$15,000 (near the federal poverty level) is 21.0 g/day with a 95% UCL of 25.8 g/day (EPA 1997). Similarly, EPA recommends use of mean and 95% UCL fish ingestion rates of 8 and 25 g/day for the recreational freshwater sport angler (EPA 1997). EPA acknowledges that with a higher fish consumption rate, anglers would be less likely to ingest only fish caught in Dick's Creek. Exhibit 1 uses a fraction fish ingested from source value of 0.05 (5 percent) based on a study of the general population of New Jersey (Stearn and others 1996). As noted above, EPA recommends that measurements based on average general population values not be used to represent unique local conditions.

Also, the RME fish consumption rate of 5.25 g/day used in Exhibit 1 corresponds to about 10 fish, each generating two 3.5-ounce filets. If it is assumed that an angler catches an average of about 2 fish of this size from Dick's Creek each month, this would correspond to a fish consumption rate of about 13 g/day. It is not unreasonable to assume that there may be anglers in the Middletown area who consume between 1 and 2 fish, each large enough to generate 2 3.5-ounce filets, per month. These assumed consumption rates would not require any fraction fish ingested from source term (in effect, the value for this term would be equal to 1). Therefore, Exhibit 1 should be revised to use a fish consumption rate between about 8 and 25 g/day associated with a fraction fish ingested from source value of 1. It is important to note that these changes alone would result in RME carcinogenic risks for the angler of greater than 1E-04.

10.

As discussed in Section 4.4.11, a dermal absorption factor for PCBs of 0.0166 was used to evaluate exposure to PCBs through dermal contact with sediment. This factor is stated to be based on a study of tetrachlorobiphenyl (Roy and others 1990). Exhibit 1 presents an equation stated to be based on the results of this study and on the assumption of a "linear relationship between organic carbon content and dermal absorption." However, the text does not identify or discuss the "low" and "high" total organic carbon contents evaluated by Roy and others (1990), nor is any evidence or justification provided to support the assumption of a "linear relationship between organic carbon content and dermal absorption." Therefore, the proposed dermal absorption factor for PCBs is not adequately supported.

EPA Region 5 recommends using a dermal absorption factor of 0.14 for PCBs (Tetra Tech 1998). This value is consistent with the value of 0.10 used to generate EPA Region 9 preliminary remediation goals for semivolatile organic compounds (EPA 2000c). Therefore, Exhibit 1 should be revised and the risks recalculated based on a dermal absorption factor of at least 0.10.

11.

Exhibit 1 uses a target risk of 1 in 100,000 (1E-05) to evaluate recreators and anglers. This target risk is too high. Ohio's Bureau of Underground Storage Tank Regulations (BUSTR) and Ohio's Voluntary Action Program (VAP) are cited in support of the 1E-05 target risk. However, neither BUSTR nor VAP guidance is directly applicable to the situation. The target risk range of 1E-06 to 1E-04 discussed in the "National Oil and Hazardous Substances Pollution Contingency Plan" (EPA 1990) is the most relevant and appropriate basis for selecting a target risk range for general population receptors such as recreators and anglers. Therefore, to be appropriately conservative for the general population, Exhibit 1 should use a target risk of 1E-06, the low end of EPA's risk range. All conclusions drawn based on a target risk of 1E-05 should be revised.

WHAT ARE OTHER COMMENTS & EXHIBIT 2

SPECIFIC COMMENTS ON EXHIBIT 2

1. Section 4.3.4 presents the fraction of soil ingested from source term value of 0.5 used in Exhibit 2. As noted in the technical review comments included in EPA's April 11, 2001, letter disapproving the risk assessment work plan, the application of a fraction ingested value of 0.5 for the soil ingested from source term is not acceptable. The current soil ingestion data to which this term is applied does not include information regarding the timing (that is, event-driven or continuous) of the soil ingestion relative to the time spent in a given activity included in EPA's April 11, 2001, should be revised to remove the fraction ingested term.
2. Section 4.3.5 notes that because "the areas that contain the highest concentrations of PCBs are located in a field behind a parking area and in the vicinity of the former drainage swale along the south boundary and are not likely to be accessed by site workers on a regular basis," it was "conservatively assumed that the most highly exposed site workers contact impacted surface soil two days per week." This rationale is misguided. The risk assessment evaluates potential exposures to the average PCB concentration in on-site soil. The receptor, in this case a site worker, is assumed to move randomly throughout the exposure area, in this case the OMS Operations area. The site worker will not be exposed only to the highest PCB concentrations located in only a portion of the OMS Operations area. Therefore, Exhibit 2 should be revised to use an exposure frequency of 250 days per year for the site worker (EPA 1991).
3. Section 4.3.6 indicates that the site worker is assumed to be exposed to soil through direct contact with a skin surface area corresponding to the hands and one-half of the head. This assumption indicates that the clothing worn by the site worker prevents direct contact of the rest of the body with soil. However, EPA's "Dermal Exposure Assessment: Principles and Applications" indicates that soil may reach skin under clothing (EPA 1992). Therefore, EPA Region 9 recommends using a skin surface area of 3,300 square centimeters (cm^2) (the value of 1,661 cm^2 is used in the on-site soil risk assessment). Exhibit 2 should be revised to use a skin surface area of 3,300 cm^2 .
4. Exhibit 2 uses an inhalation rate of 15 cubic meters per day (m^3/day) to convert an inhalation slope factor to a unit risk factor. However, EPA's Health Effects Assessment Summary Tables (HEAST) and EPA's Integrated Risk Information System (IRIS) indicate that this conversion should be done using an inhalation rate of 20 m^3/day . Exhibit 2 should be revised accordingly.
5. Exhibit 2 uses a target risk of 1 in 100,000 ($1\text{E-}05$) for the trespasser. This target risk is not acceptable. The target risk for the trespasser should be $1\text{E-}06$, the low end of EPA's risk range (EPA 1990).

SPECIFIC COMMENTS ON EXHIBIT 3

1. Exhibit 3 states that "hypothetically, trespassers might also access the property [including the Landfill Tributary], although this is extremely unlikely due to the presence of high fences and a guard station." This statement is ~~misleading~~ ^{wrong}. The perimeter of most of the AK Steel facility property is indeed surrounded by a fence and is in sight of guard stations. However, access to the Landfill Tributary from Dick's Creek is not limited in any way. There is no fence prohibiting access to the Landfill Tributary from Dick's Creek, nor are fences present along the west side of

the OMS Operations area. Therefore, trespassers can freely access the Landfill Tributary from Dick's Creek and the OMS Operations area from the tributary. Exhibit 3 should be revised accordingly.

2. Exhibit 3 states that "it is assumed that there is an equal likelihood that site workers and hypothetical trespassers contact sediment and surface water in Monroe Ditch [also known as the Landfill Tributary], the drainage swales on the west side of closed landfill #1, discharge channels associated with outfalls 002 and 003, and polishing and settling ponds associated with these landfills." This assumption is faulty. Site workers are less likely to be exposed in Monroe Ditch than in on-site surface water bodies such as the polishing and settling ponds. In contrast, trespassers are much more likely to be exposed in Monroe Ditch than in the polishing and settling ponds. As stated elsewhere in Exhibit 3, the highest contaminant concentrations are present in Monroe Ditch. Therefore, because of the use of contaminant concentrations averaged across all on-site surface water bodies in Exhibit 3, the contaminant concentrations to which site workers may be exposed are overestimated, and the contaminant concentrations to which trespassers may be exposed are underestimated. Exhibit 3 should be revised to calculate separate exposure point concentrations for Monroe Ditch, the drainage swales, and the rest of the on-site surface water bodies.

REFERENCES

- Anderson, A.C., and J.C. Rice. 1992. "A Survey of Fish and Shellfish Consumption by Residents of the Greater New Orleans Area." March.
- City of Middletown. 2000. City of Middletown, Ohio, Profile. Accessed on September 14. On-Line Address: www.ci.middletown.oh.us/images/d01x01d.gif
- Fishery Information Management Systems, Inc. (FIMS), and Department of Fisheries and Allied Aquacultures (FAA). 19xx. "Estimation of Daily Per Capita Freshwater Fish Consumption of Alabama Anglers."
- Jacobs, H.L., H.D. Kahn, K.A. Stalka, and D.B. Phan. 1998. "Estimates of Per Capita Fish Consumption in the U.S. Based on the Continuing Survey of Food Intake by Individuals (CSFII)." *Risk Analysis*. Volume 18, Number 3. Pages 283 through 291.
- Roy, T.A., J.J. Yang, A.J. Krueger, and C.R. Mackerer. 1990. "Percutaneous Absorption of Neat 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) and TCDD Sorbed on Soils." *The Toxicologist*. Volume 10, Number 1. Page 308.
- Tetra Tech EM Inc. (Tetra Tech). 1998. Records of Personal Communication and E-Mail Correspondence Regarding Dermal Absorption Factors, Dermal Adherence, and Gastrointestinal Absorption Efficiencies. Between Eric Morton and Kris Kruk, Environmental Scientists, and Mark Johnson, Risk Assessor, U.S. Environmental Protection Agency (EPA) Region 5 Dermal Work Group.
- Tetra Tech. 2000. "Human Health Risk Assessment, Dick's Creek and Tributaries, AK Steel, Middletown Works, Facility, Middletown, Ohio." Draft. November 17.
- U.S. Environmental Protection Agency (EPA). 1985. "Method 680: Determination of Pesticides and

PCBs in Water and Soil/Sediment by Gas Chromatography/Mass Spectrometry." November.

EPA. 1989a. "Assessing Human Health Risks from Chemically Contaminated Fish and Shellfish." Office of Marine and Estuarine Protection. EPA-503/8-89-002. September.

EPA. 1989b. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A)" (RAGS). Interim Final. Office of Emergency and Remedial Response. Washington, DC. EPA/540/1-89/002. December.

EPA. 1990. "National Oil and Hazardous Substances Pollution Contingency Plan." *Federal Register*. Volume 55, Number 46. April 9.

EPA. 1996. "Method 8082: Polychlorinated Biphenyls by Gas Chromatography." From "Test Methods for Evaluating Solid Waste, Volumes IA through IC, SW-846, Third Edition. Updates I, II, IIA, IIB, and III." Office of Solid Waste and Emergency Response (OSWER). Washington, DC. December.

EPA. 1997. "Exposure Factors Handbook, Volumes I through III." Office of Research and Development. EPA/600/P-95/002Fa, -Fb, and -Fc. August.

EPA. 2000a. Memorandum Regarding May 10, 2000, Site Visit to AK Steel, Middletown Works, Facility in Middletown, Ohio, EPA ID No. OHD 004 234 480. Freedom of Information Act-Exempt/Attorney-Client Privilege, Prepared in Anticipation of Litigation. From Michael J. Mikulka, Environmental Engineer, and Lisa Geist, Ecologist. To Robert Guenther, Assistant Regional Counsel. May 23.

EPA. 2000b. Administrative Order Pursuant to Section 7003(a) of Resource Conservation and Recovery Act, 42 *United States Code* Section 6973(a), for AK Steel, Middletown Works, Facility at 1801 Crawford Avenue in Middletown, Ohio, EPA ID No. OHD 004 234 489. Docket No. R7003-5-00-002. August 17.

EPA. 2000c. "Region 9 PRGs Table 2000 Update." November 3. Accessed on June 25, 2001. On- Line Address: www.epa.gov/region09/waste/sfund/prg/whatsnew.htm

West, P.C., J.M. Fly, R. Marans, F. Larkin, and D. Rosenblatt. 1993. "1991-92 Michigan Sport Anglers Fish Consumption Study." Prepared by University of Michigan, School of Natural Resources, for Michigan Department of Natural Resources, Ann Arbor, Michigan. Technical Report No. 6. May. As Cited in EPA 1997.

ENCLOSURE 2

TECHNICAL REVIEW COMMENTS ON EXHIBIT 4

(Six Pages)

TECHNICAL REVIEW COMMENTS ON EXHIBIT 4

General and specific technical review comments on Exhibit 4 are presented below. References used to prepare the comments are listed after the comments.

GENERAL COMMENT

(X) The ecological risk assessment (ERA) for Dick's Creek follows the generic ERA framework recommended by U.S. Environmental Protection Agency (EPA) guidance. However, the analyses and conclusions of the ERA are seriously flawed. Specifically, the ERA misrepresents both past and current conditions in Dick's Creek through (1) superficial comparisons to the peer-reviewed literature, (2) flawed assumptions and sampling methods, (3) simplistic determinations of ecological risk and food chain relationships, (4) lack of adequate site-specific data, and (5) data of questionable quality. These weaknesses are documented in the specific comments below with reference to evidence of substantial ecological hazards and risks in the study area. These hazards and risks are related to exposures to sediments contaminated with organic chemicals. These chemicals have been linked to seeps from landfills adjacent to Dick's Creek.

SPECIFIC COMMENTS

- (X)
- The work plan for the ERA is still a draft and has not been approved by EPA, yet the ERA was submitted. The ERA does not address previous comments ~~approved~~ by EPA that raise serious concerns about the technical methods used to evaluate ecological risk. For example, it is still not clear exactly what sampling methods, sampling design, and analytical methods were used and whether they were appropriate. These matters are of critical importance, as improper sampling and analysis can totally distort the risk characterization process, resulting in erroneous conclusions. It is imperative that the sampling methods, exact sampling locations, and analytical methods used be clearly defined in the ERA to allow a critical scientific review.
 - There are discrepancies in the data used in the ERA, calling into question the quality of the data and whether the data limitations undermine their use in the risk assessment. Also, the data used results in underestimation of exposure for aquatic and benthic receptors and for wildlife ingesting surface water and sediment. Examples of these problems are presented below.
 - ARCADIS Geraghty & Miller (AGM) reports that surface water concentrations of polychlorinated biphenyls (PCB) were determined using filtered samples. Both particulate and dissolved PCBs sorb to any filter, reducing PCB concentrations to nondetectable levels. The sampling procedure resulted in lowered estimates of PCB exposures.
 - AGM selectively used PCB data, resulting in lowered estimates of exposures. For example, chemical data collected by EPA and Wright State University (WSU), indicating higher PCB concentrations was not used in the ERA. The data was collected using EPA-approved procedures and in accordance with quality assurance/quality control (QA/QC) protocols, so there is no basis for the data's omission.
 - There are some significant discrepancies between PCB concentrations reported by AGM and those reported by the EPA, the Ohio Environmental Protection Agency (OEPA), and WSU. Although lower water concentrations may be explained by AGM's water sample

filtering, this is not the case with sediment samples. For example, for a 1999 sediment sample split with OEPA, the analytical report from Test America, Inc., the laboratory used by AK Steel Corporation (AK Steel), reported the sample concentration as a nondetect, whereas the analysis of OEPA's split sample revealed a concentration of greater than 700 micrograms per kilogram. Additionally, a Test America, Inc., memorandum stated that a concentration reported for Aroclor 1016 (about 300 parts per billion [ppb]) was likely for Aroclor 1242. This example and the consistently low PCB values in the data used by AGM raise questions about AK data quality and its laboratory's chromatograph interpretations.

- Multiple lines of evidence about the potential ecological risks of contamination in Dick's Creek have been collected for several years by AK Steel, EPA, OEPA, and WSU. However, the ERA ignores the wealth of quality data. Given the complexity of any risk assessment and the high levels of uncertainty associated with use of assumptions (which are numerous in the ERA), it is essential that all relevant data be considered and that the weight-of-evidence (WOE) process be clearly defined and used in the risk characterization process. Currently, the ERA does not do this; rather, it relies on a limited data set and excessive use of tenuous assumptions. For example, the ERA often uses one literature value when the literature values range by orders of magnitude for (1) gross energy calculations, (2) assimilation efficiencies, (3) metabolic rates, (4) sediment ingestion rates, (5) diet, (6) water ingestion rate, (7) body weights, and (8) area use factors. Each of these has a high level of uncertainty. Thus, when selectively chosen literature values for these items are used in combination to generate exposure estimates, the estimates bear little ~~resemblance~~ or no resemblance to reality. Risk characterization results based on these types of assumptions must be validated using empirical, site-specific information. In addition, the ERA relies on benthic and fish survey data and limited fish tissue data to evaluate ecological effects, and the interpretation of effects is seriously flawed (see the specific comments below). *The lack of empirical site data to support gross risk predictions is a serious flaw in the ERA.* Refer to the AquaQual Services, Inc., ERA (2001) for risk characterization using a WOE approach.
- Chemical concentrations should be related to an appropriate "near field" reference site. Use of national or regional background values is ecologically irrelevant because background concentrations of organic chemicals are zero (or close to zero for anthropogenic background concentrations).
- Concentrations of metals, polynuclear aromatic hydrocarbons (PAH) and pesticides (including "new age" pesticides) should be better evaluated for risk by means of monitoring and WOE analyses. Pesticides have been found in fish in Dick's Creek. One cannot determine the role of AK Steel-related stressors without knowing the exposure of Dick's Creek organisms to other stressors. It is certainly in AK Steel's best interests to know to what extent site stressors are originating from non-AK Steel sources.
- Surface sediment is not defined in terms of the depth sampled or the depth considered for risk. This information should be presented because sediment probably provides the primary route of impact.
- Fish filet data should also be considered, if available, even though it would result in underestimation of risk because piscivorous wildlife eat whole fish. Filet data is superior to literature-based assumptions. *IS IT AVAILABLE?*
- Clarification should be provided regarding which fish tissue samples were used for exposure

determinations. The ERA should specify (1) whether these samples were from one species and whether they were from males or females, (2) the size of the fish sampled, and (3) the time of year when sampling was conducted. There is clear EPA guidance discussing the importance of these factors in determining fish tissue concentrations.

- Excluding data collected prior to installation of the groundwater interceptor trench is inappropriate because such data is still representative of in-place contamination resulting from releases before the trench was constructed. PCBs do not break down in sediment and will stay in the environment for many decades. Fish contaminated with PCBs can live for years; therefore, contaminated fish could still be present in the ecosystem. Earlier contamination is still affecting present-day organisms, and data on this contamination helps establish trends and affects hazard, risk, and source determinations.
- Swimming, wading, sport fishing, and consumption occur in Dick's Creek and should be considered for human risk. WSU has observed these activities in Dick's Creek on numerous occasions, and they have been documented through interviews with local residents. In fact, a child with a string of catfish caught in Dick's Creek was recently shown in the Middletown newspaper. There is easy access to Dick's Creek along well-worn trails frequented by children and by recreational bikers and riders of four-wheelers.
- Relatively small streams like Dick's Creek that drain large watersheds containing impervious areas are very dynamic, rising to high levels with associated high power during multiple rain events each year. This causes movement of sediment and soil from the stream, stream banks, and surrounding areas within and outside the flood plain. Exposures of aquatic organisms and wildlife near the stream to contaminated stream banks and surrounding areas that are flooded are ignored in the ERA. Similarly, the substantial risk posed by Monroe Ditch (also known as Landfill Tributary) is ignored. Because the ERA ignores these fate and transport pathways, the determination of ecological risks is incomplete and inaccurate.
- Upwelling groundwaters have been documented but are not considered in evaluations of benthic organism exposures. If an organism has a population or community is enveloped by upwelling groundwater for extended periods and has periodic exposures to storm waters, the effects of stressors associated with these two media cannot be ignored.
- The risks to benthic invertebrates and to organisms that ingest them are poorly defined. Benthic invertebrates are likely the most important receptor group as they have the greatest exposure and provide the key link to contamination of the higher trophic levels.
- Photoinduced toxicity from PAHs is not addressed in the ERA but is likely occurring in Dick's Creek ecosystem based on observed concentrations and comparisons to the peer-reviewed literature. PAHs at the part per trillion level that have been measured in Dick's Creek surface water pose a substantial risk to fish larvae and the early life stages of amphibians via photoinduced toxicity. This phenomenon is well documented in the literature and should be addressed in the ERA.
- Arguments by AGM against the use of consensus-based sediment quality guidelines (SQG) (for example, MacDonald and others 2000) are baseless and do not agree with the consensus in the scientific literature. SQGs are one line of evidence in the WOE approach and should be used in the ERA. They are superior to the EqP approach because they have been biologically validated at hundreds of sites. Comparisons of site-specific data (using AGM, EPA, OEPA, or WSU data) to

accepted SQGs show that exceedances of threshold effect levels (adverse effects) are occurring in Dick's Creek by orders of magnitude in some cases. *This line of evidence suggests that benthic organisms are adversely affected by PCB-contaminated sediment in Dick's Creek.*

- Prediction of sediment exposures based on a derived PCB water quality benchmark that has many associated, tenuous assumptions is inadvisable when superior approaches exist. *The ERA should simply document actual exposures and adverse effects in Dick's Creek.* This approach would result in greatly reduced uncertainty and in sound conclusions based on straightforward data interpretations.
- Comparisons involving laboratory spiked sediment data in the ERA are tenuous. The spiked sediment did not resemble site sediment, the bioavailability of the chemicals would undoubtedly be different, and the approach ignores other stressors and alters exposure profiles. In addition, adverse effect levels are based on comparisons involving marine species that are less sensitive than relevant freshwater organisms in Dick's Creek.
- The ERA has few comparisons to the peer-reviewed literature regarding PCB exposure effect levels. There is a wealth of useful information EPA's Hudson River PCB assessment, which is easily accessible on the world wide web. This study's aquatic biota and wildlife values should be considered along with others from the peer-reviewed literature.
- Food chain relationships used to characterize exposures for upper trophic level receptors are superficially addressed in the work plan conceptual model but not in the ERA. The fact that fish are eating contaminated invertebrates and that birds and other wildlife are eating contaminated fish is not discussed. The AquaQual Services, Inc., ERA (2001) documents severe risks to wildlife from the lower part of the food chain using a range of assumptions about ingestion.
- There are multiple ways to assess bioaccumulation for food chain risk assessments, such as bioaccumulation models, bioconcentration factors, bioaccumulation factors, and BSAFs. For these various approaches, different PCB uptake values have been reported in the peer-reviewed literature, so predictions of uptake may vary by orders of magnitude. It is critical that an ERA evaluate which models and which assumptions are optimal and most accurate. The AGM ERA does not do so. The AquaQual Services, Inc., ERA (2001) evaluates uptake and effects based on field data and thereby selects the optimal model for prediction of risk in the higher food chain (for example, birds). There is no strong scientific evidence to support any of the risk predictions in the AGM ERA. It is simplistic to use average relative (or single-value) rates of ingestion, because they vary widely and have a large impact on risk predictions. A range of values should be used to reflect the real uncertainty that exists without empirical data. *There is no justifiable, scientifically based rationale for using the current ERA approach when far superior approaches exist.*
- The ERA should explain why the mink was used as a receptor. There is no evidence that it exists in the study area.
- The ERA should explain why the sandpiper used as a receptor. There is no evidence that it exists in the study area. Also, dabbling ducks such as mallards have been reported to take up to 60 percent sediment, whereas values of 18 percent are used for the sandpiper and mallard in the ERA).
- The EqP approach used to assess exposure for benthic invertebrates erroneously assumes that all

uptake is from pore water and does not account for exposure through ingestion of contaminated sediment. This has been well documented in the peer-reviewed literature.

- It is well established in the literature that adverse effect levels can occur in multiple species of fish with PCB concentrations below 25 mg/kg, which is the value chosen by AGM. For example, refer to multiple citations in EPA's Hudson River PCB assessment.
- The toxic effect values chosen by AGM for PCB effects on birds are too limited, and the literature documents adverse effects at much lower concentrations.
- The statements regarding PCB homologue compositions and PAH fingerprints that are related or unrelated to AK Steel need further explanation. For example, the ERA should discuss whether AK Steel has characterized all the PCB seeps and PAH sources occurring throughout the study area.
- The statements regarding lack of benthic species toxicity (see page 56 of the ERA) with only chronic toxicity to the most sensitive species are unfounded. WSU routinely observed acute toxicity (mortality) to both sensitive and relatively insensitive (midge, oligochaete) species. The ERA is not consistent with OEPA benthic surveys. These surveys show communities that reflect a "toxic" imprint, particularly with the dominance throughout the study area of a tolerant midge species, *Cricotopus bicinetus*.
- The magnitude of the habitat stress in the study area is misrepresented in the ERA. Although the habitat is a stressor in one part of the study area if one compares it to a pristine location, the habitat has been proven not to be the dominant stressor using a WOE approach (see the AquaQual Services, Inc., ERA [2001] and OEPA surveys). The OEPA modified warm water habitat criteria were developed based on biological data for channelized agricultural streams in Ohio. *The habitat factor has been removed* from these criteria because biological communities in channelized agricultural streams will never be as high in quality as at pristine sites. If a comparison is to be made to habitat effects, it should be made using OEPA's unmodified warm water criteria. Urban and industrial channelized streams, however, have additional stressors that agricultural streams do not. In addition, problems with using artificial substrates (such as Hester Dendy's) should be recognized, as they remove benthic organisms from contact with contaminated sediments; because these substrates reduce sediment exposure, effects are likely underestimated. These substrates also allow colonization by organisms that have drifted from upstream, off-site areas. Therefore, the ERA conclusions regarding the reasonable quality of benthic and fish communities are incorrect. The benthic and fish communities have shown improvement from poor to marginal status but are still adversely affected, showing a "toxic signature" (refer to the toxicity, bioaccumulation, and modeling studies reported in the AquaQual Services, Inc., ERA).
- The high level of benthic macroinvertebrate tissue contamination that has been recently observed poses a substantial risk to the higher food chain, as documented in the AquaQual Services, Inc., ERA (2001). The AGM ERA ignores bioaccumulation potential and food chain transfer, which simply cannot be done with PCBs. As one example, AquaQual Services, Inc., established which bioaccumulation model was valid for benthic invertebrates using site-specific tissue data; uptake was then modeled through the food chain, and the Belted Kingfisher was found to be at risk (a hazard quotient of 1 was exceeded) based on multiple food consumption exposure scenarios.
- ERA statements regarding the likelihood of "subadditive" toxicity are incorrect. It is well

documented that additivity dominates, yet numerous recent, peer-reviewed studies show that widespread synergistic (greater than predicted) effects commonly exist when multiple organic chemicals are present. There is a possibility that this is occurring in Dick's Creek, particularly when photoinduced toxicity of PAHs is considered.

- The ERA conclusion that "toxicity to individual invertebrates is possible on a very limited spatial scale" is unclear and should be explained in detail. Moreover, it appears that AGM considers such toxicity to be acceptable. WSU has documented acute toxicity throughout the study area that appears to pose severe ecological risks.
- Based on the comments presented above, all four summary conclusions of the ERA are unfounded.

REFERENCES

AquaQual Services, Inc. 2001. "Ecological Risk Assessment of Dick's Creek, Middletown, Ohio." Prepared for U.S. Environmental Protection Agency Region 5.

MacDonald, D.D., L.M. Dipinto, J. Field, C.G. Ingersoll, E.R. Long, and R.C. Swartz. 2000. "Development and Evaluation of Consensus-based Sediment Effect Concentrations for Polychlorinated Biphenyls." *Environmental Toxicology and Chemistry*. Volume 19. Pages 1403 through 1413.

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To: Gary Cygan, US Environmental Protection Agency, Region 5
Michael Mikulka, US Environmental Protection Agency, Region 5

Rob Darnell, US Department of Justice

From: Stephanie Simstad, Ohio Environmental Protection Agency, SWDO
Phone: (937) 285-6705
Email: stephanie.simstad@epa.state.oh.us

Laurie Massey, Ohio Attorney Generals Office, Environmental Enforcement Section

Re: Comments on AK Steel Human Health Risk Assessment Provided as Motion to Dismiss
7003 Unilateral Order

Date: 27 June 2001

Per your request, I have evaluated the human health risk assessment submitted by AK Steel as part of their Motion to Dismiss the 7003 Unilateral Order. Comments are provided below. I have focused my review on AK's calculation of the risk posed by those who ingest fish from Dick's Creek. However, there are numerous other problems with the human health risk assessment. I can provide additional information on those areas of concern, as requested. The fish ingestion evaluation is the area which most directly impacts the calculated risk posed from the PCBs in the creek and the one I could most fully evaluate in the time provided.

AK Steel's motion asserts that there is no risk posed to human or ecological receptors from PCBs in and adjacent to their facility. To support this, human and ecological risk assessments were provided. These risk assessments appear to be developed from work plans which have been submitted under the 7003. However, these draft work plans have not been approved and U.S. EPA and Ohio EPA are currently reviewing Revision 2 (*i.e.*, a third draft). The current draft work plan varies little from the most previous draft and was generally unresponsive to Agency comments. The lack of revision by AK is probably to be expected since they were not likely to modify any aspects of the risk assessment work plan which would conflict with the completed risk assessment they were attaching to the Motion. It is also important to note that the highest calculated risk from AK's completed risk assessment was a cancer risk of 1×10^{-5} , which also magically also coincides with a level of cancer risk acceptable to U.S. EPA. However, any substantive changes in the risk assessment exposure assumptions will likely cause an increase in calculated risk beyond the level of acceptable risk. Therefore, AK would not make substantive changes in the draft risk assessment work plans and will likely resist any changes in the provided risk assessments.

The main problem with the submitted risk assessment is that it substantially underestimates the

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[illegible]

ingestion of fish from Dick's Creek¹. In a risk assessment, exposure assumptions define the amount of contact that individuals have with contaminated fish, sediment, or other environmental media (e.g., grams of fish per day consumed). These determinations are termed exposure assumptions. Since the exposure assumption values form the basis for calculating the intake of contaminant by those individuals exposed (i.e., receptors), it is critical that these values be appropriately matched to the conditions at a site. If exposure assumptions underestimate the level of contact with contaminated environmental media, the calculated risk will underestimate the actual risk to those exposed. Typical exposure scenarios, or groups of exposure assumptions, are developed based on the types of receptors and their expected activities.

Using an AK example, one exposure scenario is the angler who fishes and consumes fish caught from Dick's Creek. For human exposure to PCBs in surface water environments (i.e., sediment, surface water, fish), the ingestion of fish will be the pathway of most concern. This is because fish are able to bioaccumulate PCBs from the sediment and through the food chain. Therefore, fish tissue can have significantly higher concentrations than sediment and food sources for the fish. Bioaccumulation is highest in fish which eat other fish or those fish which are "bottom feeders" such as carp or catfish. Since this pathway is the driving pathway and most likely to impact the results of the risk assessment, the exposure assumptions used for this area of the risk assessment are most important to review.

AK's approach to assessing the risk from ingestion of Dick's Creek fish has been to assert that there are few game or pan fish present in Dick's Creek, very little fishing as a result, and even less consumption of self-caught fish from Dick's Creek. AK has then tried to use these assertions to justify exposure assumptions which significantly underestimate the consumption of fish.

1) The risk assessment incorrectly states that Dick's Creek is rarely being fished for recreational purposes because the creek is too small to support suitably sized game and pan fish. AK's lines of evidence provided include an identification of other fishing opportunities nearby, their assessment of a poor habitat for game fish, and their assessment of a documented rarity of game fish.²

The water shed size for Dick's Creek is approximately 50m² which is sufficient to support viable populations of many species of fish, including game fish. The very fact that game fish such as largemouth bass, smallmouth bass, rock bass, and channel catfish populate Dick's Creek indicate that the potential exists for a good fishery. The current water quality problems in Dick's Creek have occasional and routinely chronic negative impacts on Dick's Creek fish. It is a circular argument to state that the lack of a large population of significantly-sized game fish, whose presence is limited by current contamination, is justification to assume that there is no potential for a viable recreational fishing resource in Dick's Creek. In addition to current contamination, one potential reason for the lack of larger size class fish for some species is likely impacted by the fish kills from AK spills which happened during the 1990's. It takes the resource time to recover and for fish to grow to larger size classes.

AK has asserted that there are no individuals fishing in Dick's Creek. However, U.S. EPA and the local health departments have received letters from Wright State researchers who noted that fishing has been and is currently occurring in Dick's Creek and that children were wading and swimming in the creek during play. Ohio EPA has also seen children and adults fishing and found evidence of active fishing activities (*e.g.*, presence of bait boxes, used line, *etc.*). On the front page of the June 20, 2001 Middletown Journal, there was a large picture showing a small child with a stringer of catfish he had caught from Dick's Creek. The stringer is important to note because it means that he is not merely catching and releasing, it means that these fish are being taken from the creek and home with the person fishing.

Fish, such as carp and catfish, are identified by AK as fish which are present but are not caught and/or rarely consumed. There are many areas within Ohio where these fish are caught and consumed, especially in areas with lower income individuals. Electroshocking fish data shows that carp and catfish in some segments exceed an average weight 1,000 grams. These fish are capable of providing meals for multiple individuals. Additionally, these fish are listed as "Fish Ohio" species and state-wide prizes are available for catching large individuals. Given the proximity of the residential areas close to Dick's Creek, children are likely to fish the Creek. While there may be other close areas to fish, Dick's Creek is significantly easier to access because no transportation is necessary for children to fish this area.

In U.S. EPA's comments provided to AK Steel on drafts of the work plan and AK's response to comments, the issue of the use of Dick's Creek as a fishing resource has tended to move along the lines of "is too a fishery" and "is not a fishery". Within the risk assessment and likely also in court, it appears that AK is trying to make the Agency look unreasonable in the Agency's assumption that Dick's Creek is capable of being recreationally fished. However, the AK press release and all subsequent interview quotes from AK spokespeople have stated that the risk assessment was conducted using U.S. EPA's ultraconservative exposure assumptions and process. They're able to play both sides of the coin: publically state that they've evaluated fish conservatively and appropriately yet in the assessment document reasons why fish are not being consumed from the creek.

- 2) The values used to derive a fish consumption rate specific to Dick's Creek underestimates the exposure of those who catch and eat fish from the creek. The fish consumption rate specific to Dick's Creek is derived from the fish consumption rate and the fraction of fish ingested from the source terms.³

With respect to specific exposure assumptions in the risk assessment, there are two primary exposure assumptions which are impacted by AK's assumption that Dick's Creek is unsuitable for recreational fishing. The first is the fish ingestion rate and the second is the fraction of fish ingestion which is specific to fish from Dick's Creek.

The submitted risk assessment assumes a fish ingestion rate of 5.25 grams per day for the

Reasonable Maximum Exposure (RME) and 4.71 grams per day for the Central Tendency (CT) exposure scenarios. An RME exposure scenario is one which should be reflective of individuals who have higher exposures (e.g., they fish more often or eat more fish) but these assumed exposures are still within the realm of possibility. Another name for an RME exposure scenario is a high end exposure scenario. A CT exposure is one which is reflective of typical, or average, exposure of the defined receptor.

One way to evaluate the proposed values is to calculate the number of fish meals that an individual would consume over a one year period using the provided grams per day exposure assumption. Using AK's Reasonable Maximum Exposure (RME) value, the angler receptor consumes only 95 grams of fish per year ($5.25 \text{ grams/day} \times 0.05 \text{ fraction of fish obtained from Dick's Creek} \times 365 \text{ days/year}$). This amount is approximately 42% of one complete serving of fish, assuming a 227 gram serving size. From a common sense perspective, it is unreasonable to evaluate the risk from consumption of fish at Dick's Creek when assuming that the angler receptor does not, on average, consume one fish meal per year and only consumes 12 fish total over a 30 year exposure duration.

There are significant problems with the data set selected and its use in the derivation of the fish ingestion value. The first is that the data set⁴ selected for use provides daily average *per capita* data for fish consumption. While this may appear appropriate at first consideration, there are problems with the use of *per capita* data to assess the fish intake of anglers at a specific water body. In general, recreational anglers are expected to eat more fish than the general population. Additionally, anglers with lower incomes may consume fish in higher amounts if fishing is used to supplement their diet. When using *per capita* data as the basis for fish ingestion, there are individuals who eat no fish which are averaged with those who do consume fish. This dilutes the calculated value of the average. AK has asserted that the specific *per capita* data set actually overestimates the likely fish consumption at Dick's Creek because it includes all fish consumption, whether self-caught or store purchased and it also includes estuarine and shellfish consumption. However, as noted earlier in this section, the mean value for fish ingestion is not reflective of a reasonable, number of fish meals for consumption per year. It is critical to focus on the definition of the receptor. The receptor of concern is the angler who fishes and consumes their catch from Dick's Creek. Using this working definition, the assumption of less than one fish meal per year could not be protective of even the casual fishermen of Dick's Creek. However, AK attempts to justify the use of the *per capita* data instead of the recreational angler specific data available through U.S. EPA's Exposure Factors Handbook through the assertion that Dick's Creek is not a recreational fishery.

There are numerous problems the approach used to identify and use the selected data set for the risk assessment. AK Steel selected data representative of "all ages" as the basis for the 4.71 and 5.25 grams per day values. This includes data grouped into 14 years and younger, 15 to 44 years of age, and 45 years and older bins. The inclusion of ingestion data from 14 year old and younger individuals in the adult fish ingestion rate value will inappropriately reduce, or dilute, the adult mean consumption rate. For example, the mean estimate of fish ingestion rate for those 14 years and younger (1.88 grams per day)

is approximately 20% of the value for those 15 to 44 (5.17 grams per day). AK notes that this is appropriate because their assessment shows that children do not have a higher intake per body weight than adult receptors. This is incorrect and is based on poor judgement in the selection of data. AK evaluated the child receptor as an age group of 14 years of age and under and the adult age category of 15 to 44. The child receptor is traditionally defined for ages 6 years and under. This is because this is the time at which child ingestion and contact rates often exceed adults on per body weight basis. This same 14 year old and younger category as compared with adult data for 15 years or older to determine whether children may have a higher fish consumption intake per body weight than adults. Again, if children did have higher intakes per body weight, this approach to assess it would determine that they did not have higher intakes. As noted previously, data should be obtained specific to the child receptor that is representative of children from 1 to 6 years old.

Even if the *per capita* data set selected and AK modified the age sets of the data such that only individuals 15 years and older were assessed for the fish consumption value, there are errors in the identification of the reasonable maximum exposure fish ingestion rate.

AK Steel selected the 95th percent confidence limit of the mean for use as the reasonable maximum exposure. An RME descriptor should be reflective of a 90th to 95th percentile of the distribution of data. From a statistical perspective, there is considerable difference between an upper confidence limit of mean (*i.e.*, a value which identifies an upper bound of where the true population mean will fall 95% of the time) and a 95th percentile value in the distribution. The Jacobs *et al.* (1998) article provides 90th and 95th percentile values for the data set of fish ingestion values. The *per capita* estimate for the 15 to 44 year old age group for the 90th percentile was 13.88 grams per day and for the 95th percentile per day was 36.21 grams per day. These are considerably higher than the 5.25 grams per day used by AK Steel.

The value assumed for the fraction of fish consumed which originate from Dick's Creek (*i.e.*, 5%) is too low and further serves to dilute the fish intake from Dick's Creek. This number originated from an evaluation of the percentage of fish consumption which occurred from commercial versus noncommercially obtained (*i.e.*, self-caught fish or locally obtained) from a New Jersey survey⁵ of randomly selected individuals and was not directed toward individuals who fish. There are numerous concerns with the study after reading the article. The receptor of interest is the recreational angler who catches and eats fish from Dick's Creek. Therefore, the ideal survey would focus on recreational anglers or those who fish to supplement their available food and ask them their fish consumption habits relative to commercially or noncommercially obtained fish. This would more accurately reflect the fish ingestion pattern of most concern in the risk assessment. The inclusion of individuals who do not fish within the derivation of the mixture of commercially and noncommercially obtained fish will dilute the value of noncommercially obtained fish as evaluated.

One specific problem with the survey is the timing of the survey relative to when

individuals are likely to fish. The survey took place from October 26th to November 20th and asked respondents about their consumption of fish over the previous seven days. The time of year is one obvious concern; it is less likely that people are catching and eating fish during the month of November than if the survey took place over a portion of the year when active fishing were taking place. AK asserts that the use of the 5% from this study is likely an overestimate of the true value because all noncommercial fish consumed are counted in the 5%, whereas it is likely that the noncommercially obtained fish originated from multiple fishing locations.

However, many individuals are fishing Dick's Creek because it is in close proximity to their residence and they may be fishing to supplement available food. These individuals are likely to more frequently use Dick's Creek than fishing locations which may require travel, even those that are relatively close by. This is most likely true for those who live in the trailer park adjacent the creek.

In the U.S. EPA review of these proposed values under the purview of the 7003 order, these values were not approved and U.S. EPA recommended a CT value of 15 grams of fish per day with a 0.50 fraction of fish obtained from the Dick's Creek. This value assumes that approximately 11 meals/year are consumed from Dick's Creek.

3) AK asserts that the presence of current fish consumption advisory is relevant for use in the human health risk assessment and in the determination of future fish consumption rates.

The fish consumption advisory, which has been put in place due to the documented levels of PCBs in fish, is irrelevant in the determination of whether it should be assumed that Dick's Creek is capable of being a recreational resource or whether future anglers will continue to eat their catch. It is circular to assert that in the calculation of remedial goals for Dick's Creek that the potentially reduced levels of fishing due to contamination should be used as justification to reduce the eventual level of remediation. This may be an additional area where AK will try to assert that the Agency is not being reasonable in its assessment. From a process perspective, the risk assessment is not the vehicle for making risk management decisions which are equivalent to writing off the resource.

4) AK conducted additional fish sampling using analytical methods which were not most appropriate for use in the human health risk assessment.⁶

Absent an approved sampling plan or an evaluation of the appropriate data necessary to evaluate the risk of ingestion of PCB-contaminated fish, AK conducted fish tissue sampling and used some of these data in the submitted risk assessment. The sampling results are considerably lower than the values which would have been observed using Arochlor based sampling. However, while homolog analytical data may be more accurate than Arochlor analytical data; they did not conduct sampling for congener-specific measurements. The use of congener-specific data would allow for a more thorough and

robust evaluation of risk. I can provide more information on this issue, if this would be helpful.

- 1 I am not sure of the level of risk assessment experience for the collective group of managers and attorneys who will need to use the information in this memo. I'll provide general risk assessment information to aid in the understanding of the specific technical comments. If I've underestimated folks backgrounds, my apologies.
- 2 There is overlap between the human health and ecological risk assessment in regards to habitat quality and the ability of Dick's Creek to support a recreational fishery. Please consult the ecological risk comments or Ohio EPA personnel from Division of Surface Water (DSW) for specifics on the capability of Dick's Creek to support a fishery. My comments below were generated with help from DSW and we can add additional information, as necessary.
- 3 There is not a specified term and value in the risk assessment which calculates out the fish consumption specific to Dick's Creek. I have combined the two terms for the purpose of this discussion to highlight the low fish ingestion values used in AK's assessment.
- 4 The article used by AK is "Estimates of per Capita Fish Consumption in the U.S. Based on the Continuing Survey of Food Intake by Individuals (CSFII). Risk Analysis 18(3): 283-291. U.S. EPA's Exposure Factors Handbook (EFH) references a U.S. EPA assessment (1996) of CSFII which justifies use of 6 to 6.6 grams per day for a central tendency value for general population assessments. In AK's motion, they mention multiple times that they have conducted their assessment with U.S. EPA values. For the fish ingestion rate, while they note discrepancies between the text and tables in EFH, they did not use a fish ingestion value of 6 or 6.6 grams/day.
- 5 Stern, AH *et al.*, 1996. Estimation of fish consumption and methyl mercury intake in the New Jersey population. *Journal of Exposure Analysis and Environmental Epidemiology*. 6(4):503-527.
- 6 This is an additional overlap issue with the Ecological Risk Assessment Evaluation. I'll trust they described this in detail in their submitted comments. The analytical issues are close to identical.

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IOC

DATE: June 27, 2001

TO: Gary Cygan, US EPA, Region 5
Michael Mikulka, US EPA, Region 5

Rob Darnell, US DOG

FROM: Nita Nordstrom, Ohio EPA, SWDO
Phone: (937) 285-6054
Email: nita.nordstrom@epa.state.oh.us

Laurie Massey, OAG, EES

RE: **ARCADIS Geraghty & Miller, Inc. - Ecological Risk Assessment for Dick's Creek, AK Steel Corporation, Middletown, OH**

We were surprised to learn that the Human Health and Ecological Risk Assessment for Dick's Creek was completed by ARCADIS before the second revision of the Work Plan was approved. We were in the process of completing comments on the Revision 2 Work Plan when we received a copy of the Risk Assessment. Laurie Moore is out of town due to a death in the family but any of her comments are included in these.

In the short time I've had to review this document, I have found major shortcomings and inconsistencies. Given a longer review period my comments would be more comprehensive. What I am submitting today are the most glaring examples of inconsistencies and issues that I see as problematic in this risk assessment. Additionally, Ohio EPA has previously commented on problems and issues that we have with the submitted work plans (first and second drafts) and some of those comments are reiterated in the following comments. Ohio EPA also continues to assert that the previously submitted work plan comments as well as the comments listed below must be satisfactorily addressed for an approveable Risk Assessment.

An ecological risk assessor's job is to ensure that science is effectively used to address ecological concerns. The risk manager is charged with protecting environmental values and ensure that the risk assessment will provide information relevant to a decision. Both evaluate the potential value of conducting a risk assessment to address identified problems. Ecological risk assessment "evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors" (US EPA, 1992a). It is a process of organizing and analyzing data, information, assumptions and uncertainties to evaluate the likelihood of adverse ecological

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effects. Ecological risk assessment provides a critical element for environmental decision making by giving risk managers an approach for considering available scientific information along with the other factors they need to consider (e.g., social, legal, political, or economic) in selecting a course of action.

Ecological risk assessments are frequently designed *in sequential tiers* then proceed from simple, relatively inexpensive evaluations to more costly and complex assessments. Initial tiers are based on conservative assumptions, such as maximum exposure and ecological sensitivity. When an initial tier cannot sufficiently define risk, a higher assessment tier that may require either additional data or applying more refined analysis techniques to available data may be needed. Higher tiers can provide more ecologically realistic assessments while making less conservative assumptions about exposure and effects. (USEPA, 1996) Risks should be characterized "in a manner that is clear, transparent, reasonable, and consistent with other risk characterization of similar scope prepared across programs in the Agency" (US EPA, 1995c).

The ARCADIS Ecological Risk Assessment for Dick's Creek, Middletown, Ohio is an initial tier risk assessment (baseline) in some respects. This risk assessment is perhaps overly simplistic considering the complexity of the contaminants of concern (COC), in particular the PCBs. More specific, in-depth information/data is needed. This risk assessment is based on a large-scale area in less detail. There are many data gaps for a site with the AK Steel spatial and temporal boundaries. It is apparent that in the planning dialogue between the risk manager and the risk assessor, the risk manager described the report that he wanted would show no risk due to COCs, only the channelization of the creek, which was performed in 1960. Also, the time frame of the assessment covers only 1998 to present and that the creek is recovering due to the treatment trench. Nothing is said about the stream recovery after channelization, which naturally should have been occurring since the channelization. It would be interesting to find out if the channelization, which was performed for flood control, was done only at the AK Steel site to keep it from flooding?

It is unfortunate that almost all the samples were only analyzed for PCB Aroclors when it is well known that congener analysis is far superior to the Aroclor methods, particularly for such a complex site investigation. Generally the commentary on the level of assumptions made are not included in the text of the report but added to the appendices. It appears that ARCADIS is attempting to show that all assumptions in this risk assessment are "conservative" to bias the reader. The degree of confidence in the risk assessment and the rationale for risk management decisions and options for reducing risk are important (US EPA, 1995c)

Shortcomings of this risk assessment are (1) absence of clearly defined goals, (2) endpoints that are ambiguous and difficult to define and measure, and (3) failure to identify important risks. These shortcomings can be avoided in the next tier through rigorous development of the products of problem formulation. (USEPA, 1996)

Source and stressor characteristics were not fully addressed. The type of stressor (e.g., chemical physical or biological), the source (e.g., anthropogenic, natural, point source or diffuse nonpoint source), the intensity of the stressor (e.g., the dose or concentration of a chemical, the magnitude or extent of physical disruption, the density or population size of a biological stressor), the mode

of action (e.g., how the stressor acts on organisms or ecosystem functions).

Was the channelization a part of the conceptual model? Was the source ever defined? Primary (direct) effects occur when a stressor acts directly on the assessment endpoint and causes an adverse response. Secondary (indirect) effects occur when the response of an ecological entity to a stressor becomes a stressor to another entity. Secondary effects are not limited in number. They often are a series of effects among a diversity of organisms and processes that cascade through the ecosystem.

Also, conceptual models must be reviewed by peers, scientists, etc.

U.S. EPA ECO RISK GUIDELINES USEPA EPA/630/R-95/002B August 1996 Risk Assessment Forum, Washington, DC
PG 164-167 USEPA, 1996

GENERAL COMMENTS:

The ARCADIS Dick's Creek Risk Assessment submitted June, 2001 continues to state that the "physical habitat impairment" is unrelated to AK Steel's discharges of contaminants including PCBs, PAHs and metals. They presumptively bias their Environmental Risk Assessment (ERA) by selectively picking particular data to use. The Monroe Ditch data are excluded, much of the data collected by Ohio EPA and Wright State University are excluded. Channelization of the creek is blamed for the stream degradation, although releases and discharges from the AK Steel Plant have caused fish kills as recently as 1997?. Samples in fish tissue, sediments, surface water and pore water show high levels of PCBs and metals. Other streams in this area of Ohio have been channelized and have recovered. It is stated in the introduction that flood plain soils are excluded in this ERA and that the time frame of this report is only 1998 to the present, attempting to disregard all historical data. Also, it is interesting that in the two sampling events when Ohio EPA and AK Steel split samples, all the AK Steel sample COC concentrations were lower than the Ohio EPA's.

There are inconsistencies and specific misstatements on almost every page of this report. We are listing as many of the report's inconsistencies and misstatements as time allowed. I believe that comparing the OEPA sampling reports and EA's and/or ARCADIS' would reveal many more inconsistencies. Also, I did not have time to review all the risk calculations that they used implementing their assumptions, but these could be flawed as well.

SPECIFIC COMMENTS:

Page 1; Introduction

Also need to include exposure of terrestrial wildlife receptors to chemicals in soils

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Page 1; 1.1 2nd paragraph

Flood plain soils are a potential source area, direct contact with plants, terrestrial invertebrates (earthworms, etc.) and a terrestrial pathway. ("The deposition of particle-bound PCBs from the atmosphere and sedimentation of them from water are largely responsible for their accumulation in sediments and soils" - NAS, 2000)

Page 1; 1.1 3rd paragraph

Must consider all available data – from 1995 to present (US EPA, Ohio EPA, AK Steel). Although data collected before January 1998 remediation actions were completed may be different, it must be taken into consideration in a baseline evaluation for the most conservative assessment. This spatial and temporal data can help to fill in data gaps that exist in this risk assessment. Finally, historical data can also help to show if Dick's Creek is recovering. Monitoring is an important tool in determining this.

Statement "concentrations of PCBs *may* be influenced by changes in OMS area water use practices and groundwater interceptor trench installation..." no specific data mentioned. Monitoring and historical data would also be useful here. Also, this would not affect the historical flood plain soils PCB concentrations and possible exposure.

Page 2; first objective

Must include flood plain soils in environmental media

Page 2; 1st paragraph

Ohio EPA's Division of Surface Water, 1997 report shows a table of AK Steel outfalls/discharges in the study area. AK Steel is one of few dischargers to Dick's Creek and is the largest industry.

The surrounding land is not only urban and industrial but agricultural, rural and residential, as well.

It is not appropriate to state here that the "assessment overestimates AK Steel's contribution to any risks." This is commentary only and is not verified by data. Also this is not the proper venue for these types of statements, it only contributes to the ERAs overall defensive tone.

Page 4; 2.1, 2nd paragraph

As mentioned previously, it is difficult to discuss this site and exclude data prior to 1998 due to the historical (site background) relevance of Ohio EPA reports and data as well as Wright State University/EPA Star Grant reports and AK Steel's own investigative data. Media sampled, PCB concentrations etc. need to be included as these seeps are currently being sampled and PCBs are detected. Monroe Ditch is mentioned here although in the following paragraph it is pointed out that the Ditch is excluded from the ERA.

The mention of the interceptor trench and treatment on eastern bank -again we now have seeps

on the western bank that have PCB detections.

Also, "other ...industrial facilities located along the creek" must be identified, the type of facility, total number of dischargers, COCs, etc.

In this paragraph, "agricultural runoff" is introduced, although excluded from the Introduction; Purpose and Objectives section.

Paragraph 3

Monroe Ditch must be included in the study area. This is where many of the samples were collected (seep samples with PCB detections) and the potential PCB source area. By excluding the Monroe Ditch, they are excluding a large portion of the data. There is very little concrete in this ditch and signs of beaver and ground hogs were easily identified during a recent site visit in this area. The riparian habitat has been altered by AK Steel due to the beaver activity, but there are still viable edge shrubbery and larger trees along this ditch. The minnows are likely to swim into the creek and this is complete ecological exposure pathway. The nature and extent of the "aquatic species and aquatic-feeding wildlife" mentioned in the final sentence, must be defined.

Page 5; paragraph 1

We are referred to Section 2.5 (Conceptual Site Model) in reference to the "ecological importance" of Monroe Ditch where sediments and water are referred to as the "primary receiving media" and the sediment and water of Dick's Creek is a secondary source of exposure"where is the primary source of exposure???

2.1.1; paragraph 1

A 1994 aerial photograph (ODNR) is used to determine land cover types and percentages. If the study is encompassing 1998 to present, the land use should also reflect this time frame.

Land Cover Types:

Open water percent is not included by ODNR but this information can and should be obtained from other sources. It is not stated where/how the 3% was derived. This must be accurately reported.

For all the other land cover types on this page (e.g., non-forested Wetland, Wooded, Schrub/Scrub), it is necessary to know exactly how these percentages were obtained. These must be accurately reported for wildlife population estimates.

Page 6; first bullet

Agriculture/Open Urban should not be considered one land cover type but should be broken out. Once again, how the percentages were derived must be included in this report. Also, once again, although there was no mention of agricultural land use in the Introduction of this report, it is included here.

Second bullet

Urban land cover should not include residential land use. Also, once again, residential land use was not included in the Introduction of this report. Again, how percentages

were derived must be included in this report.

Third bullet

"Barren areas" must be described more specifically, are these part of urban?? Also, again, percentages must be justified.

First paragraph

They went to a lot of trouble here to determine specifics of the nature and extent of the wetlands but all the other land use/cover categories are very sketchy in their descriptions.

2.1.2; 1st paragraph

Water depths of Dick's Creek described in this paragraph are very low and the time of year is not specified although summer low flows appear to apply to this sentence as well as the next. Dick's Creek is not classified as an intermittent stream.

2nd paragraph

River miles should be referenced in their geographic description of the channelized portion of Dick's Creek. It would seem that the burden of proof that channelization is the cause of all the AK Steel/Dick's Creek area degradation is on AK Steel. The fact that for many years (since at least 1995) this stream has had discharges containing COCs overexceedences detected in AK Steel's outfalls is never addressed here. Channelization changes a portion of the physical characteristics of this area of the stream but not the anthropogenic chemicals detected in this area. Also, the macroinvertebrate populations continue to be impacted in this area which should not be an issue approximately 30 years after channelization, due to natural succession and recovery.

Page 7 paragraph 1

Once again they are using data outside the initially stated 1998 to present. This is another example of why it is necessary to include all historical data to complete this risk assessment, not just pick and choose what data suits their purposes for each section. In 1995 OEPA reported a spill from AK Steel 002 which resulted in a fish kill.

Paragraph 2

QHEI characteristics and metrics are specific to fish habitat characteristics and not macroinvertebrates.

Paragraph 3

The benthic invertebrate abundance and species composition variations are not discussed nor it is mentioned whether the ICI limits for aquatic use designation were met.

Paragraph 4

Ohio EPA studies also included catfish and other species of fish. Also, the fish in the lower half of the study area are mobile and likely to swim along the AK Steel portion of Dick's Creek, unless they are avoiding the area due to contamination. They should state the source of

this data.

Page 8; 2.1.3, paragraph 4

Last sentence - beaver and ground hogs are also observed there.

Page 9; 2.2, first paragraph

Representative ROIs can be used for quantitative evaluation in the ERA but the entire food web must be considered in the Conceptual Site Model (The Conceptual Site Model must be peer reviewed)

second paragraph

This food web is over simplified.

Many areas of Dick's Creek are large enough to support adult piscivorous fish, if they can live long enough in the stream. Please use references/citations to support this claim.

Third paragraph

Plants should be included in the food web and the Conceptual Site Model as well as evaluated as an ROI. Also, information on reptiles are available at several sources (new EPA Wildlife Contaminants Exposure Model Software is now available).

Page 10, fish (second bullet)

The fish community not only comes in contact with water but sediments (e.g., catfish, suckers) and suspended solids in the water column.

Raccoon (forth bullet)

Raccoons are opportunists. They might have a preference for riparian woodlands but also seem to be at home in residential areas - they are generally mobile and feed where the food is, so they will feed in channelized areas also

Page 11, mink

Last sentence, are they stating that Dick's Creek can only support one or two mink?

Page 12; 2.3 first paragraph

Since we have not delineated the source, analyte parameters should not be limited yet. Also, The Monroe Ditch data should not be excluded in this ERA.

Second paragraph

Did USEPA approve the Sampling and Analysis Plan? (ARCADIS 2000) I thought that is why we are all working on comments for revisions, etc.?? or are those the workplans?

Data needs to be presented to show that the arsenic and mercury are naturally occurring background concentrations (although some naturally occurring background concentrations at some sites can be above HH levels).

Paragraph 3

OEPA study of 1997 does not conform to the 1998 to present study time frame as stated in the introduction. Although, OEPAs sampling in 1998 revealed pesticides, VOCs (including benzenes and methylene chloride) and PCBs in *fish tissues*. Also, once again the agricultural land use is brought up which was excluded in the introduction.

The spill event IS historically representative of current conditions because this spill created a fish kill that the river is still recovering from. Benzenes are a definite issue in this area due to the Coke Oven Gas release.

Page 13; 2.3.1 paragraph 1

Aroclor and homologue analysis of PCBs are currently not the USEPA preferred method. It is good to have all data but **congener analysis** is the only method that can show how PCBs have degraded through weathering and biodegradation. Unfortunately the Aroclor analysis was performed on all but a couple of samples, which were analyzed using the homologue method. Homologue analysis is OK for the screening level ERAs but the baseline ERA (which this report is) is on a more rigorous level of data analysis. EPA guidance (1997a) recommends that congener-specific analysis be performed in addition to estimating total PCBs using homologue techniques, particularly for animal tissue and sediments. This is because the specific PCB congeners are selectively bioaccumulated and biomagnified up the food chain. Certain PCB congeners are more toxic than others and this is part of what makes a PCB contaminated site ERA so complex. (Valoppi et al. 1999)

The Aroclor method used for the ERA data can only confound the toxicity and proper application of risk values for this baseline risk assessment. To state that this site is "safe for the public after running a few general numbers through what appears to be more a basic screening risk assessment than baseline level is irresponsible. Most risk assessments are reworked several times during the process as the conceptual site model and other information contained in the ERA are dynamic and modified as more information/data are obtained.

2.3.2 PAHs

Some LPAHs are more toxic than others and some HPAHs are more toxic than others. Also, most PAHs exist as mixtures (just as PCBs). Photo-induced toxicity (PAH exposure coupled with Ultra Violet (sunlight) exposure) is another issue that can be extremely toxic to fish in particular. These make calculations for ecological risk more complicated but it is necessary to take all the available information into consideration when performing a baseline ERA.

Page 14; 2.3.3 paragraph 1

SEM, AVS and TOC and particle (grain) size are all important elements in the overall adsorption of metals to sediments. Dick's Creek generally has sandy (larger grain size), low (<2.6) TOC and the sediments are well oxygenated so none of these parameters would decrease the bioavailability of metals to aquatic organisms. Dissolved metals (metals dissolved in the surface and pore water - water between sediment grains) are generally considered more bioavailable to aquatic organisms but invertebrates living in the sediments and bottom feeding fish (e.g., catfish, etc.) Also come in contact with metals that are on the sediment particles as well as ingesting sediments. Also, different concentrations of various metals can be toxic to aquatic organisms.

Certain metals can exist in high concentrations (e.g., iron) and others are toxic at very low concentrations (e.g., cadmium). Additionally, various species of aquatic organisms will have various sensitivities to a metal at the same concentration. Also, total metals concentrations must also be considered because they generally occur in mixtures.

2.4 paragraph 1

Again, excluding Monroe Ditch as a complete exposure pathway to wildlife and aquatic organisms is an error. We realize that if this ditch is excluded, the high levels of COCs present will not have to be included in the ERA calculations. This could mean the difference between a hazard ranking of 1 or less than 1. Fish do swim from Dick's into the ditch and are exposed, beavers and ground hogs have been observed at and in the ditch (AKS cut down some of the riparian areas of the ditch due to nuisance beaver activity there) and sediment dwelling invertebrates are eaten by the smaller fish that do live in the ditch and these minnows swim into Dick's Creek. When I toured the site in February, 2001, I did not see any cement lining in this ditch.

Page 15; 2.5

Once again, Monroe Ditch is a "tributary" to Dick's Creek and must be considered as part of the stream system, not excluded.

Page 16 assessment endpoints

Need more time on this...

Measurement endpoints

These endpoint measurements are only as good as the data available. PCB Aroclor analysis of samples, only using the dissolved metals concentrations in sediments, not considering toxicity sensitivities of specific organisms, and predictions (subjective) compared to reference toxicity values (RTVs) are all subject to problematic issues that are not taken into consideration in this ERA. All data available should be evaluated including AK Steel's, Wright State University, US EPA and Ohio EPA data. It appears that ARCADIS is selectively including/excluding data that will bias the ERA ranking outcome to underestimate risk in the AK Steel/Dick's Creek area.

Page 1; 3.1.1, first bullet

"Only metals were detected", is a misstatement - OEPA 1998 data shows PCBs were detected as well as other COCs.

Whole-body analysis of bottom feeding fish at one sampling point (Location C) will not give you data indicative of the stream. Fish are mobile and these fish could have come up from the Great Miami River for all we know. A one time sampling event at one site is an extremely poor sampling plan. In an adequate sampling plan, at least three sites should have been sampled, including a control site. Also, the Aroclor analysis method is least desirable and most confounding.

Second bullet

Specify depth of "subsurface sampling." Although "ecological receptors are not exposed to subsurface sediments, the leaching of many contaminants including metals, PCBs and PAHs

buried under the sediment surface can contaminate surface waters (particularly in sandier river beds like Dick's Creek) (National Academy of Science (NAS), 2000). What were the results of the sampling?

Third bullet

Using both analytical methods is a good way to verify data, as long as data from two different methods are not considered to be interchangeable or comparable. PCBs were detected if data from both methods were used?

Page 18; first bullet

no results of sampling

second bullet

Only metals detected? Check raw data

third bullet

again, it sounds like PCBs were detected but no results

forth bullet

No results of sampling mentioned

fifth bullet

Only metals detected again. Check raw data.

sixth bullet

Only "surface" sediment analysis is being used for this ERA. Need to specify depth of sampling. Sections of the sediment core sample taken should be sampled.

Page 19; first bullet

Again, entire cores should be collected and analyzed for site characterization purposes. Also, the "surface" needs to be defined in depth. No results reported here

second bullet

No results reported here - do not have the report they are referring to - check with Surface Water. Again, was the Sampling and Analysis Plan approved by USEPA?

First paragraph and subsequent bullets

What were these data sources and why were they excluded from the exposure assessment for this ERA? Additionally, if chemical concentrations in fish fillets were excluded because wildlife eat whole fish, were whole fish analyzed and is the sample size of the whole fish samples enough to use the data?

Why is all of this data excluded when throughout this ERA, ARCADIS refers to sampling event data that occurred before the groundwater interceptor trench was completed in January, 1998? This appears to be very selective data use by ARCADIS.

Page 20 first bullet

"very conservatively assumed" is normal data reporting

2nd bullet

averaging sample results will dilute the higher concentration.

Page 21

problems here with PCB data analysis and how Aroclor and homologue analyses are compared/reported in the ERA

3.2

All COC measurements should also be added in the exposure assessment

3.3

Problems here with maximum and mean values and how they are used in this ERA. **Spatial distribution of PCBs in the ERA exclude Monroe Ditch.**

Page 22, first paragraph,

Circular reasoning for not measuring PAH exposures directly for all potential exposure routes.

2nd paragraph,

Once again, circular reasoning for not measuring metals exposures directly for all potential exposure routes. Must look at water (surface and pore) AND sediment metals concentrations (Using the media that will show the lowest metals concentrations)

3.4

Why exclude mink for the study area as a whole? What empirical evidence do they have of no mink in the area of Dick's Creek showing the highest concentrations of the COPECs??

Page 23

Are mink excluded in the incidental ingestion of sediment calculations?? Why??(they are the **most sensitive wildlife**)

Page 24, 1st paragraph

Once again, use of mean concentrations might not be appropriate here. Mean concentrations of all studies (except those excluded??)

2nd paragraph

The SEM metals adjustments were negligible in their raw data tables. Has that changed??

Page 27 last bullet

States that Dick's Creek is not a highly productive stream and that less than 1/2 the mink diet would be aquatic prey. Any evidence of these feeding habits in this area? **These lower**

numbers can bias the ERA outcome Terrestrial data on COCs are not in these sampling reports. Did they include mammals in the food web and Conceptual Site Model??

Page 28 last bullet (area use factor)

Again, they attempt to decrease the mink habitat in the Dick's Creek area to only the unchannelized portions. Now they are stating the assuming the mink get 1/2 their diet from Dick's creek is "very conservative".

Page 29; 5th bullet (sediment ingestion rate)

What does the USEPA 1993a handbook say here? Why use only Beyer et al. Reference and estimate?

Page 33; 4.1.1, 1st paragraph

Why aren't other sampling report data included (OEPA, WSU, etc.?)

Last paragraph, last sentence

again, several other streams in this geographic area of Ohio are channelized and have recovered.

Page 34, 1st paragraph

It is interesting that they talk about every other stressor and nothing about the COPECs contributing to stream degradation, although there have been several fish kills. Also Hester-Dendy samplers are not the most appropriate sampling technique for this Creek. Other sampling technique should be incorporated.

2nd paragraph

The fact that the channelized portion of Dick's Creek is also the portion of the Creek where AK Steel is located and has numerous outfalls is a double stressor to the macroinvertebrate communities in this area.

Page 35 2nd paragraph, last sentence

They are discussing partitioning of PCB congeners, although there is no congener data in any of the reports used in the ERA. A lot of this complicated calculating appears to be for baffling the reader purposes.

Page 36 Kow information

How did they arrive at the "overall" Kow for PCB mixture? And how does the data change when these are "averaged" for each homologue - what if there is no homologue data?

Page 37, 1st paragraph

Are these organisms representative of this site and are they sensitive?

Last sentence

There should be no need to normalize "to 1 % carbon" as the TOC is < 2.6.

Page 39; 4.1.4

SEM, AVS, and TOC should not be an issue in metals. They are all too low to make any adjustments in metals concentrations in Dick's Creek samples.

Also, just because metals are not dissolved in pore water, doesn't mean that routes of exposure through sediments don't exist.

Page 40 & 41; 4.2.1, last paragraph

DELT anomalies generally show up on more mature fish. The fish kills have taken care of that.

4.2.2, 2nd paragraph

In recent years (OEPA) whole-body concentrations of PCBs in adult fish have been detected in much higher levels than 25 mg/Kg.

Page 42; 4.2.3 1st paragraph

....fish exposure to PAHs via other exposure pathways are not available for Dick's Creek??

4.2.4

Extreme pH changes when releases occur in the AK Steel/Dick's Creek area change the dissolved metals concentrations.

4.3.2

"Mammalian toxicity data for PCBs are not available on a homologue basis"???

4.4.1

"Only one study ...examined avian reproductive toxicity of Aroclor 1248???"

Page 52 first paragraph

last sentence, this is another example of congener analysis being optimal

Page 55; 5.1, 1st paragraph

...Dick's Creek study area is not at significant risk relative to any COPECS..??.

2nd paragraph

"The overall quality....is consistent with a lack of significant COPEC-related toxicity. Chemical concentrations..are also below relevant effects concentrations in over 92% of the samples EVALUATED" (this would be the key word)

3rd paragraph

"As described in Appendix A, the homologue composition of PCBs ...is different than in all other samples collected...indicating a source of PCBs unrelated to AK Steel..".

This is possible but congener analysis would be the missing link here.

Page 64 Summary

The stream was channelized in the 1960s and would have recovered by now without all the industrial inputs into the stream. AK Steel is the largest and has the most outfalls and discharges along the degraded area of Dick's Creek. There have been several releases and fish kills, all of which are ignored by this report. The creek is recovering, particularly since the interceptor trench was installed. That improvement in the creek after the engineering of the trench should be a clue as to the impacts of the PCB and other contaminants AK Steel have discharged. We do know that there are still seeps containing PCBs and elevated pH waters discharging from the west bank of Monroe Ditch into Dick's Creek currently.

AK5 038679

In case you haven't had enough to read yet :) Here are some of the newest PCB risk guidelines from the NAS

As set forth in "A Risk Management Strategy for PCB-Contaminated Sediments, (NAS 2000) "the primary objective for managing PCB-contaminated sediments is the reduction of risk." The characterization of existing and potential risks to affected parties is a critical part of this evaluation. The primary focus in analyzing risks from PCB-contaminated sediments are the ecological effects from exposure, primarily bioaccumulation of the PCBs through the aquatic food web and also water consumption and inhalation.

PCB-contaminated sediments risk analysis is complicated, multifaceted and use of the ERA as a prescribed, methodical framework is the optimal way to address it. Although there are several ERA frameworks available, the Presidential/Congressional Commission on Risk Assessment and Risk Management (1997) used in tandem with the US EPA ecological risk assessment guidance (EPA 1997b, 1999) is generally consistent with the commission's structure and is commonly used in PCB-contaminated sediment site ERAs.

Exposure Assessment to PBCs

Ecological Effects from PCB exposure

Determine concentrations of PCBs in various environmental (compartments)

- Sediment

- Water

- Benthic invertebrates

- Fish

Evaluate dietary exposures to PCBs of higher trophic level organisms

- Birds

- Aquatic Mammals

- humans

Receptors of interest (ROIs) and conceptual model for site serve as the basis for the exposure-assessment studies.

Exposure study questions:

- What are the existing exposure levels of PCBs in the sediments?

- What are the expected exposure levels of PCBs for each potential risk

(particularly for higher trophic level organisms (birds, aquatic mammals, humans))

Sampling of sediments:

Surface-sediment grab samples (top 2-10 cm)

OR Sliced sediment core samples (top 1-2 m of sediment – slices in 2-20 cm intervals depending on specific sediment site) water column samples collected/analyzed (filtered or unfiltered)

benthic organisms analyzed composite whole-organisms

fish analyzed as individual or composite samples for smaller fish and as fish fillets for larger edible fish

Dietary exposure rates are determined from PCB concentrations in food items (e.g., fish) times food consumption rates.

NOTE: because PCBs are a group of compounds and the absolute and relative concentrations of PCBs in sediments are changing as a function of space time, and trophic level, *the method used to quantify PCBs can have a great impact on the risk-assessment process.* There is a great deal of variation in the quality and quantity of information obtained by different methods, as well as cost. Thus, there are tradeoffs between the type of information collected and the number of samples that can be studied. No single correct allocation of resources is appropriate for every site. Rather, a decision on allocation should be made in the problem-formulation state of an assessment.

Because congeners degrade at different rates depending on the environment, commercial Aroclor products are difficult to identify and difficult to quantify in the environment. The weathered multicomponent mixtures might have significant differences in peak patterns compared with Aroclor standards. The degree and position of chlorine substitution influences not only physical and chemical properties, but also toxic effects. Thus, it is important to consider not only the total PCB concentration in a sample but also to characterize the distribution of individual PCB congeners in a sample. Congener-based methods provide a more accurate approach in quantifying total PCB concentrations in environmental samples.

Organic carbon and lipid normalization for benthic organisms and fish are used to assess toxicity and recognize the preferential sorption of PCBs into these phases. Also, sediment grain size, mineralogy, water content, etc. are analyzed.

Problem formulation

Define COCs

Possible co-contaminants

Delineate areas of concern (AOC/AOI)

Geographic areas of concern

Identify populations potentially at risk and their size

All possible risks to humans and wildlife from immediate and long-term exposure and remedial activities to COCs

The identification and size of populations potentially at risk

This info is used to identify clearly the:

Assessment endpoints

HH – carcinogenic and noncarcinogenic

Sensitive populations considered

Eco – reproductive success

Population sustainability of resident fish, piscivorous and other predatory birds and mammals.

Used to select measurement endpoints

Indirect effects

Sensitivity and response time

Diagnostic ability

Practicality issues

Select measurement endpoints

Responses (e.g., litter size in mink)

Develop a conceptual model for the site (must be peer reviewed)

Analysis

Identification of exposure pathways

Characterization of exposure

Sources of PCBs and other contaminants

Contaminants' distribution in environment

Exposure to eco and hh populations

Assessment of relationship between exposures and effects

Evaluation of PCB dose-response and other cont -response relationships OR

Evidence that exposure to PCBs and other conts. Cause an observed response

Quantitative uncertainty analysis is performed

Products of this phase are summary profiles that describe exposure and contaminant-response relationships

PCB Risk Characterization

Quantifying overall risks to humans and wildlife.

Impacts of PCB contamination (social, cultural and economic?)

Comparative Risk Assessment

AK5 038682

**EXHIBIT 1 - AK STEEL COMPLIANCE ASSESSMENT
WITH ACTIONS REQUIRED BY 7003 ORDER (as of 6/18/01)**

| Paragraph Number | Action Required | Date Required | Compliance Status |
|------------------|---|---------------------|--|
| 122 | Prevent human exposure to contaminated sediments and surface water in the landfill tributary and Dick's Creek | 14 days* 8/31/00 | Partial Compliance. AK did not sponsor any radio broadcasts and did not publish any warnings in the Dayton Daily News or the Middletown Journal. AK has maintained its existing warning signs, ordered 50 new signs on 8/31/00, and posted additional signs <u>9/ /00</u> . AK provided written notification to Amanda Elementary school on _____. |
| 123 | Eliminate areas of known seepage and operate current trench system | 0 days 8/17/00 | Partial Compliance. AK has eliminated seepage in areas known at the time of the Order issuance, but has not, to our knowledge, taken any actions to eliminate new seeps. It has operated and maintained the existing trench system and continued to monitor its effectiveness weekly. |
| 124 | Prevent effluent from discharging to surface water | 0 days 8/17/00 | Compliance. AK has prevented any waters from the interceptor trench from entering surface waters. |
| 125 | Eliminate future seepage and conduct sampling to determine if PCBs or other solid wastes are being released | 0 days 8/17/00 | <p>Partial Compliance. AK has noted additional seepage but has not always sampled for other than PCBs, and has not sampled surface water or sediments. This requirement is more than likely superceded by requirements specified in the seep inspection plan submitted pursuant to paragraph 132, and approved with modifications on October 30, 2000.</p> <p>Noncompliance. Regarding future seepage, there have been no reports of any actions taken by AK to prevent seepage when discovered. AK's letter to OEPA dated 3/13/01 says that AK does not view seeps as violations of either the Ohio Administrative Code or the Ohio Revised Code. It appears AK is in violation of the requirement to eliminate future seepage.</p> |
| 126 | Monitor surface water quality | 0 days 8/17/00 | Compliance. AK has monitored surface water at least monthly as specified in the Order. |

✓
Also
can

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|-----|--|--|--|
| 174 | Notice of Intent to Comply | 5 days 8/22/00 8/30/00 | Noncompliance. AK has never submitted an intent to comply with the Order. In a letter dated 8/28/00, Robert Guenther, ORC, advised AK's Counsel that we would accept the notice of intent to comply at the 8/30/00 meeting scheduled to discuss the order pursuant to paragraph 183. There has been no correspondence citing this as a violation. |
| 127 | Replace pump at kish pot operations | 30 days | Compliance. The pump was replaced in July 2000, prior to issuance of the Order. This was documented by AK in its letter to Lisa Geist, EPA, dated 9/25/00. |
| 128 | Submit plan for installation of a permanent water recycle system | 60 days 10/17/00 11/14/00 | Compliance. A report dated 9/28/00 was submitted on October 4, 2000. It stated that due to reduced water usage, all water currently used was evaporated. That plan was disapproved on October 31, 2000. A revised plan was submitted 11/14/00 and approved with modifications by EPA on 12/1/00. The report documented that installation of a permanent water recycle system was not necessary. |
| 129 | Evaluate alternatives to minimize the influence of kish pot operations on groundwater flow and submit a report | 60 days 10/17/00 11/14/00 | Compliance. A report dated 9/28/00 was submitted on October 4, 2000. It stated that due to reduced water usage, all water currently used was evaporated. On October 31, 2000, EPA approved the finding that since the revised system appeared to introduce no water to the subsurface, there was no need to further assess alternatives. |
| 130 | Evaluate practice of reusing water in slag processing area and submit a report | 60 days 10/17/00 11/14/00 TBD | Compliance. A report dated 9/28/00 was submitted on October 4, 2000. That plan was disapproved on October 31, 2000. A revised plan was submitted 11/14/00 and approved with modifications by EPA on 12/1/00. It was agreed that the findings of the assessment would be submitted concurrent with the results for the soil and groundwater plans. That date has yet to be established. |

AK5 038545

| | | | |
|-----|---|--------------------------------------|---|
| 130 | Evaluate water re-use/reduction in slag processing area | 9/30/00 11/14/00 3/1/01 TBD | Compliance. As part of negotiations held 8/30/00, AK agreed to evaluate water re-use/recycle opportunities within the slag processing area in addition to the items specified in the order. The initial plan dated 9/28/00 did not address this issue, as documented in EPA's disapproval letter dated 10/31/00. The revised plan dated 11/14/00 addressed this issue, and it was approved on 12/1/00. A report was due 3/1/01, per the approved workplan. On 2/15/01, AK requested that this report be combined with the other report required by P130 and submitted concurrent with that report. This was approved by EPA on _____. This report is now due in conjunction with the soil and GW reports. A date for that has yet to be established. |
| 131 | Install and operate permanent water recycle system | 180 days 2/17/01 | Compliance. In its approval letter dated 12/01/00, EPA agreed with the finding that installation of a permanent water recycle system was not necessary. |
| 132 | Develop and submit seep inspection plan | 30 days 9/17/00 9/30/00 | Compliance. Per a meeting to discuss the order held 8/30/00, the deadline was extended to 9/30/00. See AK letter dated 9/1/00 and EPA letter dated 9/6/00. Plan was approved with modifications on October 30, 2000. |
| 133 | Initiate implementation of seep inspection plan | 30 days 9/17/00 10/30/00 | Evaluating compliance. Plan was approved 10/30/00 and required that first inspection be conducted week of 10/30/00, and that inspections be conducted every 2 weeks. While it is believed that seep inspections are being conducted, it is also thought that AK is not sampling surface and sediment quality at the locations of the seeps, as required by the October 30, 2000, letter. Correspondence is pending on this issue. |

✓
P130/132

AK5 038546

| | | | |
|-------------------|--|---|--|
| 134 135 136 | Submit Sediment Sampling Plan | 30 days 9/17/00 9/30/00 | Evaluating Compliance. Per a meeting to discuss the order held 8/30/00, the deadline was extended to 9/30/00. See AK letter dated 9/1/00 and EPA letter dated 9/6/00. Actual plan was not submitted until October 4, 2000, 4 days late. No action was taken. The plan and QAPP were both disapproved on 10/30/00. Revised plans were submitted 11/14/00. The revised plan was approved with modifications on 12/01/00. In the approval, modification #2 stated that Human health & ecological risk assessment issues would be addressed in a separate work plan subject to EPA approval. A modified work plan to address the EPA approval with modifications was submitted on 12/14/00. Sampling activities occurred, with EPA oversight, from 12/18/00 through 2/1/01. |
| 137 | Risk Assessment Work plan (part of sediment sampling plan) | 30 days 9/17/00 9/30/00 11/14/00 | Noncompliance. Initial sediment plan had no methodologies and inputs for any risk calculations. See comment 5 of 10/30/00 disapproval letter. The initial work plan was submitted 11/14/00. That plan was disapproved on 12/13/00. A revised work plan was required within 15 days, and was submitted on 1/18/01. No action taken on late submission. That version was disapproved on 4/11/01. EPA gave AK 21 days (until 5/2) to resubmit. That was done 5/24/01 (22 days late). That plan is still under review. Options are to disapprove and require modifications; approve with modifications, or disapprove and conduct the work ourselves . Since this has yet to be approved, and the sediment report is overdue, this aspect is in noncompliance. |

AK5 038547

| | | | | |
|--------------|-----|---|--|--|
| ✓ Add-ins | 143 | Submit PCB Source Identification and Removal Plan | 30 days 9/17/00 9/30/00 11/30/00 2/10/01 | Noncompliance. Per a meeting to discuss the order held 8/30/00, the deadline was extended to 9/30/00. See AK letter dated 9/1/00 and EPA letter dated 9/6/00. Actual plan was not submitted until October 4, 2000, 4 days late. No action on late submission was taken. The plan was disapproved 11/7/00. A revised plan was submitted 11/30/00. That plan was again disapproved 1/10/01. A meeting was held with AK on 2/8/01 to discuss the comments on this and the hydrogeo plan. On 2/15/01, AK requested that it be allowed to combine the soil and hydrogeo work plans into one work plan and submit it by 3/14/01. This was approved _____. On 3/14/01, a combined soil and hydrogeological investigation plan was submitted. The extent of comments we still have would normally require disapproval and resubmission. However, in order to get this going, EPA has decided to approve with modifications. This is pending. One issue is whether this continued failure to address the comments is a violation of the order. |
| ✓ Add-ins | 146 | Submit Groundwater (Hydrogeologic Investigation) Plan | 60 days | Noncompliance. The initial plan was dated 9/29/00. It was disapproved by EPA on _____. A revised plan was submitted on 12/14/00. Draft comments (in lieu of disapproval), were provided to AK on 2/6/01. A meeting was held with AK on 2/8/01 to discuss the comments on the hydrogeo and soil plans. On 2/15/01, AK requested that it be allowed to combine the soil and hydrogeo work plans into one work plan and submit it by 3/14/01. This was approved _____. On 3/14/01, a combined soil and hydrogeological investigation plan was submitted. The extent of comments we still have would normally require disapproval and resubmission. However, in order to get this going, EPA has decided to approve with modifications. This is pending. One issue is whether this continued failure to address the comments is a violation of the order. |
| | 138 | U.S. EPA approval of Sediment Sampling Plan | A (tbd) 12/01/00 | |

| | | | |
|-----|--|--|---|
| 140 | Implement and complete Sediment Sampling Plan and submit the Dick's Creek Sediment Report | 60 days from A 4/1/01 | Noncompliance. Approval with modifications letter was dated 12/1/00. A revised schedule of 16 weeks was approved. Report was due 4/1/01. It has not been submitted; AK's defense is that methodologies for risk assessment have not been approved. |
| 158 | Submit Dick's Creek Remediation Plan | 90 days from A 5/1/01 | Noncompliance. Since the revised deadline for the Dick's Creek Sediment Report was revised to 4/1/01, the remediation work plan would be due 30 days later, or 5/1/01. It has not been submitted. AK's defense is that methodologies for risk assessment have not been approved, so the report is not yet due. |
| 144 | Implement and complete activities related to the PCB Source Investigation and Removal Plan | 12/ 31/00 | Noncompliance Since the work plan to conduct the source identification activities has yet to be approved, this deadline was not met. |
| 159 | Submit Fish Sampling Plan | 3/01/01 3/16/01 | Compliance. On 2/15/01, AK requested that the fish and biological sampling plans be combined into one work plan, and requested an extension through 3/16/01. A proposed plan was submitted by the revised deadline and is under review by OEPA and USEPA. |
| 161 | Submit Biological Monitoring Plan | 3/1/01 3/16/01 | Compliance. On 2/15/01, AK requested that the fish and biological sampling plans be combined into one work plan, and requested an extension through 3/16/01. A proposed plan was submitted by the revised deadline and is under review by OEPA and USEPA. |
| 166 | Submit Monthly reports, | 11/15/00 12/15/00 1/15/01 2/15/01 3/15/01 4/15/01 5/15/01 6/15/01 | Noncompliance AK did not submit its first monthly report until March 26, 2001. Further, P 166 required that all sampling and monitoring results be submitted. For example, AK has not submitted any sampling and monitoring results with respect to its activities under P133 of the order. |

Note: This table was created by updating Exhibit 6 to the Order

* Number of days from effective date – effective date is August 17, 2000. Where a second or even third date is shown, the succeeding dates are revised dates provided in correspondence to AK.

AK5 038549

☐ FOLLOW-UP NEEDED - WHY: _____

UNITED STATES, et al. v. AK STEEL CORPORATION
CASE NO. C-1-000530

PRIVILEGED DOCUMENT COVER SHEET

Beginning and Ending Bates Numbers: _____

Document Date: _____

6/25/01
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Document Owner: _____

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Author(s): _____

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Title: _____

AK Compliance Assessment with Actions
Required by 57083 Order

Subject Matter Description: _____

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Redacted: _____

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(Description of
Redactions Needed -
Highlight Information
to be Redacted on a
Copy of the Dearborn):

Privilege Type (Check all
that apply):

AC (Attorney-Client)
WP (Work Product)
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STL (Settlement Communication)
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ATTORNEY: _____

ETM

DATE: _____

5/1/03

**EXHIBIT 1 - AK STEEL COMPLIANCE ASSESSMENT
WITH ACTIONS REQUIRED BY 7003 ORDER (as of 6/25/01)**

| Paragraph Number | Action(s) Required | Date Required | Compliance Status/Comments |
|------------------|---|---------------------|--|
| 122 | Prevent human exposure to contaminated sediments and surface water in the landfill tributary and Dick's Creek | 14 days* 8/31/00 | Partial Compliance. AK did not sponsor any radio broadcasts and did not publish any warnings in the Dayton Daily News or the Middletown Journal. AK has maintained its existing warning signs, ordered 50 new signs on 8/31/00, and posted additional signs 9/ /00. AK provided written notification to Amanda Elementary school on _____. |
| 123 | Eliminate areas of known seepage and operate current trench system | 0 days 8/17/00 | Partial Compliance. AK has eliminated seepage in areas known at the time of the Order issuance, but has not, to our knowledge, taken any actions to eliminate new seeps. It has operated and maintained the existing trench system and continued to monitor its effectiveness weekly. |
| 124 | Prevent effluent from discharging to surface water | 0 days 8/17/00 | Compliance. AK has prevented any waters from the interceptor trench from entering surface waters. |
| 125 | Eliminate future seepage and conduct sampling to determine if PCBs or other solid wastes are being released | 0 days 8/17/00 | <p>Partial Compliance. AK has noted additional seepage and has sampled each seep for pH, conductivity, metals, PAHs and PCBs, but has not sampled adjacent surface water or sediments. This requirement is more than likely superceded by requirements specified in the seep inspection plan submitted pursuant to paragraph 132, and approved with modifications on October 30, 2000.</p> <p>Noncompliance. Regarding future seepage, there have been no reports of any actions taken by AK to prevent seepage when discovered. AK's letter to OEPA dated 3/13/01 says that AK does not view seeps as violations of either the Ohio Administrative Code or the Ohio Revised Code. It appears AK is in violation of the requirement to eliminate future seepage.</p> |
| 126 | Monitor surface water quality | 0 days 8/17/00 | Compliance. AK has monitored surface water at least monthly as specified in the Order. |

AK5 038537

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|-----|--|--|--|
| 174 | Notice of Intent to Comply | 5 days 8/22/00 8/30/00 | Noncompliance. AK has never submitted an intent to comply with the Order. In a letter dated 8/28/00, Robert Guenther, ORC, advised AK's Counsel that we would accept the notice of intent to comply at the 8/30/00 meeting scheduled to discuss the order pursuant to paragraph 183. There has been no correspondence citing this as a violation. |
| 127 | Replace pump at kish pot operations | 30 days | Compliance. The pump was replaced in July 2000, prior to issuance of the Order. This was documented by AK in its letter to Lisa Geist, EPA, dated 9/25/00. |
| 128 | Submit plan for installation of a permanent water recycle system | 60 days 10/17/00 11/14/00 | Compliance. A report dated 9/28/00 was submitted on October 4, 2000. It stated that due to reduced water usage, all water currently used was evaporated. That plan was disapproved on October 31, 2000. A revised plan was submitted 11/14/00 and approved with modifications by EPA on 12/1/00. The report documented that installation of a permanent water recycle system was not necessary. |
| 129 | Evaluate alternatives to minimize the influence of kish pot operations on groundwater flow and submit a report | 60 days 10/17/00 11/14/00 | Compliance. A report dated 9/28/00 was submitted on October 4, 2000. It stated that due to reduced water usage, all water currently used was evaporated. On October 31, 2000, EPA approved the finding that since the revised system appeared to introduce no water to the subsurface, there was no need to further assess alternatives. |
| 130 | Evaluate practice of reusing water in slag processing area and submit a report | 60 days 10/17/00 11/14/00 TBD | Compliance. A report dated 9/28/00 was submitted on October 4, 2000. That plan was disapproved on October 31, 2000. A revised plan was submitted 11/14/00 and approved with modifications by EPA on 12/1/00. It was agreed that the findings of the assessment would be submitted concurrent with the results for the soil and groundwater plans. That date has yet to be established. |

AK5 038538

| | | | |
|-----|---|--------------------------------------|---|
| 130 | Evaluate water re-use/reduction in slag processing area | 9/30/00 11/14/00 3/1/01 TBD | Compliance. As part of negotiations held 8/30/00, AK agreed to evaluate water re-use/recycle opportunities within the slag processing area in addition to the items specified in the order. The initial plan dated 9/28/00 did not address this issue, as documented in EPA's disapproval letter dated 10/31/00. The revised plan dated 11/14/00 addressed this issue, and it was approved on 12/1/00. A report was due 3/1/01, per the approved work plan. On 2/15/01, AK requested that this report be combined with the other report required by P130 and submitted concurrent with that report. This was approved by EPA on _____. This report is now due in conjunction with the soil and GW reports. A date for that has yet to be established, but will more than likely not be until 2002. |
| 131 | Install and operate permanent water recycle system | 180 days 2/17/01 | Compliance. In its approval letter dated 12/01/00, EPA agreed with the finding that installation of a permanent water recycle system was not necessary. |
| 132 | Develop and submit seep inspection plan | 30 days 9/17/00 9/30/00 | Compliance. Per a meeting to discuss the order held 8/30/00, the deadline was extended to 9/30/00. See AK letter dated 9/1/00 and EPA letter dated 9/6/00. Plan was approved with modifications on October 30, 2000. |
| 133 | Implement seep inspection plan | 30 days 9/17/00 10/30/00 | Noncompliance. Plan was approved 10/30/00 and required that first inspection be conducted week of 10/30/00, and that inspections be conducted every 2 weeks. While it is believed (frequency not verified) that seep inspections are being conducted, AK is not sampling surface and sediment quality at the locations of the seeps, to determine seep impacts, as required by the October 30, 2000, letter. Correspondence is pending on this issue, identifying failure to sample surface water and sediments is a violation. . |

| | | | |
|-------------------|--|---|--|
| 134 135 136 | Submit Sediment Sampling Plan | 30 days 9/17/00 9/30/00 | Compliance. Per a meeting to discuss the order held 8/30/00, the deadline was extended to 9/30/00. See AK letter dated 9/1/00 and EPA letter dated 9/6/00. Actual plan was not submitted until October 4, 2000, 4 days late. No action was taken. The plan and QAPP were both disapproved on 10/30/00. Revised plans were submitted 11/14/00. The revised plan was approved with modifications on 12/01/00. In the approval, modification #2 stated that human health & ecological risk assessment issues would be addressed in a separate work plan subject to EPA approval. A modified work plan to address the EPA approval with modifications was submitted on 12/14/00. Sampling activities occurred, with EPA oversight, from 12/18/00 through 2/1/01. |
| 137 | Risk Assessment Work plan (part of sediment sampling plan) | 30 days 9/17/00 9/30/00 11/14/00 | Noncompliance. Initial sediment plan had no methodologies and inputs for any risk calculations. See comment 5 of 10/30/00 disapproval letter. The initial work plan was submitted 11/14/00. That plan was disapproved on 12/13/00. A revised work plan was required within 15 days, and was submitted on 1/18/01. (No action taken on late submission.) That version was disapproved on 4/11/01. EPA gave AK 21 days (until 5/2) to resubmit. On 4/26/01, AK requested an extension until 5/24/01. The revised plan was submitted dated 5/24/01 (22 days late). That plan is still under review. Options are to disapprove and require modifications; approve with modifications, or disapprove and conduct the work ourselves . Since this has yet to be approved, it may be argued that this aspect is in noncompliance. |

| | | | |
|-----|--|--|---|
| 143 | Submit PCB Source Identification and Removal Plan (a.k.a. Soil Investigation Plan) | 30 days 9/17/00 9/30/00 11/30/00 2/10/01 | <p>Noncompliance. Per a meeting to discuss the order held 8/30/00, the deadline was extended to 9/30/00. See AK letter dated 9/1/00 and EPA letter dated 9/6/00. Actual plan was not submitted until October 4, 2000, 4 days late. No action on late submission was taken. The plan was disapproved 11/7/00, with revision required within 21 days. A revised plan was submitted 11/30/00. That plan was again disapproved 1/10/01. A meeting was held with AK on 2/8/01 to discuss the comments on this and the hydrogeo plan. On 2/15/01, AK requested that it be allowed to combine the soil and hydrogeo work plans into one work plan and submit it by 3/14/01. This was approved _____. On 3/14/01, a combined soil and hydrogeological investigation plan was submitted. The extent of comments we still have would normally require disapproval and resubmission. However, in order to get this going, EPA has decided to approve with modifications. This is pending. One issue is whether this continued failure to address the comments is a violation of the order, which frustrates work anticipated to already be completed under the order.</p> |
| 146 | Submit Groundwater (Hydrogeologic Investigation) Plan | 60 days 10/17/00 | <p>Noncompliance. The initial plan was dated 9/29/00. It was disapproved by EPA on 11/14/00. A revised plan was submitted on 12/14/00. Draft comments (in lieu of disapproval), were provided to AK on 2/6/01. A meeting was held with AK on 2/8/01 to discuss the comments on the hydrogeo and soil plans. On 2/15/01, AK requested that it be allowed to combine the soil and hydrogeo work plans into one work plan and submit it by 3/14/01. This was approved _____. On 3/14/01, a combined soil and hydrogeological investigation plan was submitted. The extent of comments we still have would normally require disapproval and resubmission. However, in order to get this going, EPA has decided to approve with modifications. This is pending. One issue is whether this continued failure to address the comments is a violation of the order.</p> |
| 138 | U.S. EPA approval of Sediment Sampling Plan | A (tbd) 12/01/00 | <p style="text-align: right;">AK5 038541</p> |

| | | | |
|-----|--|---|--|
| 140 | Implement and complete Sediment Sampling Plan and submit the Dick's Creek Sediment Report | 60 days from A 4/1/01 | Noncompliance. Approval with modifications letter was dated 12/1/00. A revised schedule of 16 weeks was approved. Report was due 4/1/01. It was submitted dated 4/26/01. A letter identifying late submission as a violation is pending. (AK's probable defense is that methodologies for risk assessment had not been approved by the time the report was due.) |
| 158 | Submit Dick's Creek Remediation Plan | 90 days from A 5/1/01 | Noncompliance. Since the revised deadline for the Dick's Creek Sediment Report was revised to 4/1/01, the remediation work plan would be due 30 days later, or 5/1/01. It has not been submitted. AK's probable defense is that methodologies for risk assessment have not been approved, so the report is not yet due. |
| 144 | Implement and complete activities related to the PCB Source Investigation and Removal Plan | 12/ 31/00 | Noncompliance Since the work plan to conduct the source identification activities has yet to be approved, this deadline was not met. Approval of the work plan with modifications in order to conduct the soil investigations is pending. |
| 159 | Submit Fish Sampling Plan | 3/01/01 3/16/01 | Compliance. On 2/15/01, AK requested that the fish and biological sampling plans be combined into one work plan, and requested an extension through 3/16/01. A proposed plan was submitted by the revised deadline and is under review by OEPA and USEPA. |
| 161 | Submit Biological Monitoring Plan | 3/1/01 3/16/01 | Compliance. On 2/15/01, AK requested that the fish and biological sampling plans be combined into one work plan, and requested an extension through 3/16/01. A proposed plan was submitted by the revised deadline and is under review by OEPA and USEPA. |
| 166 | Submit Monthly reports, | 11/15/00N 12/15/00N 1/15/01N 2/15/01N 3/15/01(late) 4/15/01Y 5/15/01(check) 6/15/01(check) | Noncompliance AK did not submit its first monthly report until March 26, 2001. Further, P 166 required that all sampling and monitoring results be submitted. For example, AK has not submitted any sampling and monitoring results with respect to its activities under P133 of the order. Therefore, it is in noncompliance for failure to submit 4 reports, for late submission on the one due 3/15/01, and for failure to attach monitoring and sampling results. |

Note: This table was created by updating Exhibit 6 to the Order

AK5 038542

* Number of days from effective date – effective date is August 17, 2000. Where a second or even third date is shown, the succeeding dates are revised dates provided in correspondence to AK.

AK5 038543

☐ FOLLOW-UP NEEDED - WHY: _____

UNITED STATES, et al. v. AK STEEL CORPORATION
CASE NO. C-1-000530

PRIVILEGED DOCUMENT COVER SHEET

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Document Date: 6/20/01
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Document Owner: MM

Author(s): Harold O'Connell

Addressee(s): Lori Massey

Copyee(s): _____

Document Type: Memo

Title: Ohio EPA Final Comments

Subject Matter Description: Internal Comments on AK Steel Work Plan for Human Health and Ecological Risk Assessment

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(Y/N)

(Description of
Redactions Needed -
Highlight Information
to be Redacted on a
Copy of the Dearborn):

Privilege Type (Check all
that apply):

☒ AC (Attorney-Client)
☒ WP (Work Product)
☐ DP (Deliberative Process)
☐ CBI (Confidential Business
Information)
☐ PA (Privacy Act Information)
☐ STL (Settlement Communication)
☐ (Other - please specify _____)
☐ NR (Non-Responsive Document)

ATTORNEY: REM DATE: 5/6/03

Ohio EPA

Southwest District Office

401 E. Fifth Street * Dayton, Ohio 45402-2911 * 937-285-6357

RELEASED
DATE 11/30/18
RIN # 2018-00481
INITIALS [Signature]

INTEROFFICE MEMORANDUM

ATTORNEY/CLIENT PRIVILEGE CORRESPONDENCE

To: Lori Massey, AAG, AGO's
From: Harold O'Connell, DHWM/SWDO
Date: June 20, 2001
Subject: AK Steel- Instances of Non-compliance with RCRA 7003 Order

Provided below are instances of AK's non-compliance, either directly through not adequately addressing the activities required by the 7003 Order, or through failing to address modifications required within USEPA's approval of workplans required by the order:

Section B. Slag Processing Area

Paragraph 130:

"Within 60 days of the effective date of this Order, AK Steel must evaluate whether reusing the effluent from the current interceptor trench and treatment system in the slag processing operations (e.g., dust control, etc.) (a) results in concentration of PCB's or other solid wastes in soil or other media at the site, or (b) poses a risk of runoff to any surface waters, and submit a report of its assessment."

The following modification and related concern were incorporated into USEPA's 12/1/01 approval of the Water Use Alternatives in Slag Processing Operations Plan:

"....approved with the following modification. 1. The Ohio State Water Quality Standard for PCB's (0.001ug/L for protection of aquatic life and 0.00079ug/L for protection of human health from non drinking water sources) will also apply if the treated water enters surface waters.

Review of the revised plan has also indicated the following additional concern:

It is possible that PCB-treated water utilized at the OMS pump house can be discharged via outfall 002 (due to emergency or backflow conditions). Documentation of the invert elevation of the pipe drop connection between outfall 002 and the OMS pump house and engineering evaluation of possible backflow or emergency conditions which may allow this to occur may resolve this uncertainty regarding the discharge of PCB-treated waters to Dick's Creek. Please note that discharge of such waters is not authorized by the current NPDES permit."

To date no such evaluation has been conducted.

AK5 038481

RELEASED

DATE

BY

INITIALS

Section C. Elimination of Seeps and other Discharges

Paragraph 132

"Within 30 days of the effective date of this Order, AK Steel must develop and submit, for review and approval, an inspection plan and checklist to inspect weekly, at a minimum, the west and east banks of the landfill tributary, the banks of Dick's Creek adjacent to the closed landfills, and the drainage swales adjacent to closed landfill #1 for evidence of seepage or impacts from seepage, to surface waters and sediments."

Furthermore, paragraph 125 of the Orders states:

"As of the effective date of this Order, AK Steel must eliminate seepage of PCB's or other solid wastes to waters of the United States in areas where it may reasonably occur in the future. If evidence of additional seepage is noted, AK Steel must conduct sampling to determine if PCB's or other solid wastes are being released , and the effects of the seepage on surface waters and sediments."

The following modification was incorporated within USEPA's 10/30/00 Seep Inspection Plan approval letter:

- "4. The Order, at paragraph 125, requires that if evidence of additional seepage is noted, AK Steel must conduct sampling to determine if PCB's or other solid wastes are being released, and the effects of the seepage on surface waters and sediments. The plan specifies only that a sample of the seep water will be collected and analyzed for PCB's. **The plan must be revised to specify that sampling to determine the effects of the seepage on surface waters and sediments will be conducted....**"

Neither the plan, nor associated field procedures, have been revised to incorporate the required modification. Gary Cygan, USEPA/Region V is in the process of preparing a letter to AK representatives to address this issue.

Section D. Sediment and Surface Water Investigation

Paragraph 137:

"The Sediment Sampling Plan must include the methodologies and all associated inputs for any risk calculations proposed by AK Steel to determine the chemical concentrations of PCB's, PAH's, or other solid wastes in sediment, surface water, soils, and groundwater which pose an unacceptable risk to human health or ecological receptors. Any risk assessment activities proposed by AK Steel must follow appropriate U.S. EPA and Ohio EPA guidance documents, including but not limited to: Risk Assessment Guidance for Superfund (RAGS) Parts A through D (e.g., Volume 1- Human Health Evaluation Manual, EPA/540/1-89/002, December, 1989 and subsequent) ; Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Assessments, EPA/540/R-97/006, June 1999; and Guidelines for Ecological

Risk Assessment, EPA/630/R-95/002F, April 1998.

As Stephanie Simstad pointed out within her memo of 6/14/01:

"There are still some major items where Ohio EPA is in disagreement with AK Steel's proposed risk assessment plan. The following items are those that Ohio EPA feels most strongly must be satisfactorily addressed for an approvable work plan:

- 1) Documentation that Assessment of Flood Plain Soil and Ground Water Pathway Was Not Conducted Through the 7003 Order;
- 2) Use of Dick's Creek for Recreational Fishing and Fish Ingestion Rate;
- 3) Reasonable Maximum Exposure Values Should be Reflective of High-End Exposures, Not Upper Bound Estimates of the Mean;
- 4) Determination of Exposure Unit and Calculation of Concentration Term;
- 5) Cooking Loss Factor;
- 6) Use of Analytical Technique to Quantify and Assess Risk of PCBs at the Site, and;
- 7) Hotspot Determination.

In summing it up for DOJ representatives, our experience with AK while under the 7003 has been:

- they conduct field activities prior to having agency approved work plans;
- when conducting field activities under work plans in which USEPA has tied modifications to the approval AK representatives haven't always incorporated consideration of those modifications. We'll continue to discourage USEPA from approving workplans in which significant modifications are required;
- those work plan deficiencies identified to AK through our reviews are not adequately addressed within the revised work plans they submit .

As always, don't hesitate in contacting me at (937) 285-6078 with any questions.

AK5 038483

Key Human Health Comments

1. The "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" (revised work plan) needs to be revised to incorporate a better and more complete definition and use of exposure areas in Dicks Creek and the Landfill Tributary. This issue is discussed in General Comments 1 and 10 (bullet 5) and Specific Comment 14. In particular, as noted in General Comment 1, the revised work plan makes no mention of potential exposure in the Landfill Tributary (aka, Monroe Ditch). Also, as noted in Specific Comment 14, the revised work plan (see Section 2.2.3) identifies only two exposure areas for the study area: the OMS Operations Area and Dicks Creek. Existing analytical data from both the OMS Operations Area and Dicks Creek confirms that contamination is not uniformly distributed in these areas. Also, the exposure potential may differ in portions of these areas as well. Therefore, multiple exposure areas are warranted in both the OMS Operations Area and Dicks Creek.
2. The revised work plan proposes to use national and regional background levels rather than site-specific background levels for comparison with investigative analytical results for the purpose of identifying chemicals of potential concern (COPC). This issue is identified in General Comment 2 and Specific Comments 6, 7, and 8. However, facility- and area-specific background samples are being collected from various media as discussed in AK Steel's sampling plans. The revised work plan should be further revised to use facility- and area-specific background results as part of the determination of COPCs. National and regional background levels should be used only to provide context.
3. The revised work plan should be revised to better define the use of different types of polychlorinated biphenyl (PCB) data (for example, Aroclor-specific results, total PCBs, homologue data, and congener data). The use of the different types of PCB data should be presented as part of the data quality objectives (DQO) process. This issue is discussed in General Comments 5, 10 (bullets 1 and 9) and Specific Comment 3.
4. The revised work plan proposes use of an alternate reference dose (RfD) for PCBs. EPA guidance recommends using toxicity factors selected from a hierarchy of sources: IRIS, HEAST tables, and the National Center for Environmental Assessment (NCEA). Revised work plan should be further revised to select a PCB RfD from EPA sources. This issue is addressed in General Comment 6. The alternate PCB RfD can be used and discussed as part of the uncertainty analysis.
5. The original set of EPA comments noted that the work plan should be revised to develop and use project-specific DQOs. The development and use of DQOs is addressed in General Comment 10 (bullet 1).
6. The original set of EPA comments noted that the work plan was proposing to drop chemicals with similar mechanisms of action. The original comment stated that this approach was contrary to EPA guidance and that the work plan should be revised to retain chemicals with similar mechanisms of action. Specifically, this concept means that if one carcinogenic polynuclear aromatic hydrocarbon (PAH) is retained as a COPC, then all carcinogenic PAHs should be retained and should not be screened out as COPCs. This issue is addressed in General Comment 10 (bullet 6) and Specific Comment 7.
7. Discussion and consideration of angler scenario needs significant revisions regarding presence of

subsistence fishing (associated with the presence of low-income families immediately adjacent to Dicks Creek), the presence of a greater variety of fish in Dicks Creek than suggested in the revised work plan, the use of an increased ingestion rate appropriate for subsistence lifestyle, elimination of the use of a fraction ingested for this scenario (conceivably enough fish could be caught in Dicks Creek to support a subsistence lifestyle), and elimination of the use of a "cooking loss" term - evidence is inconclusive whether loss occurs and if it does, what the magnitude of such loss is). Revisions to the angler scenario are discussed in Specific Comments 9, 12, 18, 19, 20, and 56.

8. Revised work plan proposes use of fraction ingested (FI) terms to evaluate potential exposure to sediment and soil. As noted in Specific Comment 17, this is not acceptable (the current soil ingestion data to which this term is applied are not able to provide information regarding the timing (i.e. event driven or continuous) of the soil ingestion relative to time spent in a given activity. Therefore, revised work plan should be further revised to eliminate this term.
9. Finally, the revised work plan does not address the potential for exposure to contaminants in surface water and sediment associated with swimming in Dicks Creek. The revised work plan only addresses wading. Swimming has been confirmed in Dicks Creek. This issue is addressed in Specific Comment 10.

Mike,

These are some of the most critical issues that we have problems with. Items 1, 2, 3, 4, 6, and 7 will have the greatest impact on the results. Items 5, 8, and 9 as well as the DQO portion of Item 3 will have a less significant impact and are more important from a completeness point of view. Please call me at (312) 856-8797 if you have any questions or would like to discuss these items. The remainder of the 47 pages of comments not mentioned above are still important, but either can be readily addressed down the road or will make little substantive impact on the risk assessment results.

Eric

AK5 038485

The high priority comments focus on six high priority aspects of the proposed procedures for evaluating ecological risk:

1. Use all Available Data

General comment 3 and specific comment 34 mention that all available data should be used in the ecological risk assessment, not just the post-remediation data.

2. Resolve Issue of Using PCB Homologues or Aroclors

General comment 5 and specific comments 28 and 36 identify several issues stemming from the type of PCB data that will be used in the risk assessment. There are advantages and disadvantages with each type of data, however there are no data quality objectives which will govern the type of data and link it with the intended use of the data.

3. Methods for Assessing Exposure and Toxicity to Benthic Invertebrates

General comments 9 and 11, and specific comment 46 discuss problems with the conceptual and technical approaches proposed for evaluating risk to benthic invertebrates. This is a high priority because the sediments are contaminated with PCBs and these receptors are very sensitive to them.

4. Selection of Log Kow Values (GC 10, SC 28)

General comment 10 and specific comment 28 mention problems associated with the selection of log Kow values for PCB congeners. The toxicity of PCBs to benthic invertebrates will be evaluated using the equilibrium partitioning approach. This method uses organic carbon partitioning coefficients that are calculated from log Kow values. However, congener-specific log Kow values available in the literature vary widely, thus influencing the results of the EqP analysis. The work plan should clearly state how log Kow values will be selected.

5. Development of Reference Toxicity Values

General comment 10 details concerns with the lack of documentation about how reference toxicity values will be identified. This is a high priority because these values are used to calculate hazard quotients.

6. Exposure Parameters

General comment 11 states that the arithmetic mean should not be used as the exposure point concentration. To overcome uncertainty associated with the exposure point concentration, the comment stated that the 95 UCL of the mean should be used.

Master List of High Priority Comments:

General comments 3, 5, 9, 10, and 11

Specific comments 28, 34, 36, and 46

AK5 038486

The high priority comments focus on six high priority aspects of the proposed procedures for evaluating ecological risk:

1. Use all Available Data

General comment 3 and specific comment 34 mention that all available data should be used in the ecological risk assessment, not just the post-remediation data.

2. Resolve Issue of Using PCB Homologues or Aroclors

General comment 5 and specific comments 28 and 36 identify several issues stemming from the type of PCB data that will be used in the risk assessment. There are advantages and disadvantages with each type of data, however there are no data quality objectives which will govern the type of data and link it with the intended use of the data.

3. Methods for Assessing Exposure and Toxicity to Benthic Invertebrates

General comments 9 and 11, and specific comment 46 discuss problems with the conceptual and technical approaches proposed for evaluating risk to benthic invertebrates. This is a high priority because the sediments are contaminated with PCBs and these receptors are very sensitive to them.

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General comment 10 and specific comment 28 mention problems associated with the selection of log Kow values for PCB congeners. The toxicity of PCBs to benthic invertebrates will be evaluated using the equilibrium partitioning approach. This method uses organic carbon partitioning coefficients that are calculated from log Kow values. However, congener-specific log Kow values available in the literature vary widely, thus influencing the results of the EqP analysis. The work plan should clearly state how log Kow values will be selected.

5. Development of Reference Toxicity Values

General comment 10 details concerns with the lack of documentation about how reference toxicity values will be identified. This is a high priority because these values are used to calculate hazard quotients.

6. Exposure Parameters

General comment 11 states that the arithmetic mean should not be used as the exposure point concentration. To overcome uncertainty associated with the exposure point concentration, the comment stated that the 95 UCL of the mean should be used.

Master List of High Priority Comments:

General comments 3, 5, 9, 10, and 11
Specific comments 28, 34, 36, and 46

AK5 038487

DRAFT**Ohio EPA Response to AK Steel Press Release**

Ohio EPA is urging the public to continue to heed the fish consumption advisory issued by the Ohio Department of Health for Dick's Creek in Butler County. In addition, the Butler County Health Department has posted, and AK Steel now maintains, signs warning the public to avoid contact with the creek. These actions were taken based upon documented levels of PCB contamination found in fish, water and sediment from Dick's Creek.

The public should not be misinformed by the statements ~~is being~~ released by AK Steel on June 19, 2001, in a company press release. Neither the US EPA nor the Ohio EPA has had the opportunity to review the risk assessments submitted to the federal court by AK Steel. That review will occur prior to the scheduled July 9, 2001, hearing date. The US EPA order that is being challenged by AK Steel requires the company to prepare human health and ecological risk assessments after receiving approval of a work plan from US EPA. The work plan is intended to outline the assumptions and methodologies to be used in preparing the risk assessments. To date, the company, through its consultant, has not been able to obtain approval of the work plan. Ohio EPA and US EPA have commented on two draft work plans and are reviewing the third one submitted by the company. To date, neither agency is satisfied with the methods and assumptions proposed by the company.

"It is premature to draw any conclusions from the recent press release by the company," said Ohio EPA Director Christopher Jones. "I urge the public to take appropriate precautions until the health agencies are satisfied that a health threat does not exist," he said. Ohio EPA data indicates that contamination in Dick's Creek remains at levels of concern.

Gary Lygan (312) 386-5902
(312) 353-4342

AK5 038488

Roberts Gierth
Commit

June 20, 2001

VIA FACSIMILE AND
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

DE-9J

Mr. Carl Batliner
AK Steel - Middletown Works
1801 Crawford Avenue
Middletown, OH 45043

Re: Soil and Groundwater Investigation Plan Submitted Under Administrative Order
Pursuant to Section 7003(a) of the Resource Conservation and Recovery Act, 42 U.S.C. §
6973(a)
AK Steel, Middletown Works, 1801 Crawford Avenue, Middletown, OH
USEPA ID Number OHD 004 234 480

Dear Mr. Batliner:

We have reviewed the Soil and Groundwater Investigation Plan submitted March 16, 2001,
pursuant to paragraphs 143 and 146 through 150 of the subject Order on behalf of AK Steel by
Arcadis Geraghty and Miller. Paragraphs 143 and 146 require approval of the plan by U.S.
EPA, pursuant to procedures specified in paragraphs 162 through 164 of the Order.

Please be advised that your submission, the Soil and Groundwater Investigation Plan, is hereby
approved with modifications. You must address the following **modifications** in a revised final
plan, to be submitted to the U.S. EPA with a copy to the Ohio Environmental Protection Agency
(OEPA) within **20 days** of your receipt of this letter. **Implementation of the approved plan,**
with the approved modifications, must begin immediately.

We remind you that under the Order, we have the right to impose final modifications and to
commence any portion of the work ourselves and recoup the costs incurred in doing that work
from your company.

failure to meet the requirements of the plan
Additionally, violations of the plan, including the modifications
we are requiring to implement, may subject your company to fines of up to \$5,500 per day
Modifications of violations, pursuant to section ~~7003~~ 7003(b) of RCRRA,
42 USC § ~~6973~~ 6973(b).

1. Section 1.1 Site Description:

All of the discussion in Sections 1.1 Site Description and 1.2 Investigation Objectives uses the phrases "
OMS operations area" or "OMS area" and Section 1.1 describes the OMS area as "The OMS operations

AK5 043370

are located south of Oxford State Road and east of Yankee Road, immediately east and northeast of Monroe Ditch and south of Dick's Creek." This site description excludes the closed landfills of concern that are located west of the Monroe Ditch. The OMS area is the only area mentioned in the Site Description on page 1. **Correct the description to include the landfill area west of Monroe Ditch.**

Section 1.2 Investigation Objectives, 1st paragraph, refers to the 7003 Order Paragraphs 143 through 150 (Soil Investigation and Hydrogeologic Investigation). Paragraph 143 in the 7003 Order requires that AK Steel "submit for review and approval a work plan...to identify, remove and properly dispose of all remnant sources of PCBs in soils from locations at the AK Steel facility which may contribute to releases of PCBs to Dick's Creek, the landfill tributary, or pose an unacceptable risk to human health and the environment." Paragraph 146 of the 7003 order relates to the Hydrogeologic Investigation, and uses the phrase "in the vicinity of the slag processing area." **The site description will be modified to include at least the landfills west of the landfill tributary, and any other area that is covered by paragraphs 143 and 146 of the 7003 order.**

2. Vertical Gradients, Page 31

The last sentence of the last paragraph states that "Available groundwater quality data from 2000 indicate that upper aquifer ground water does not contain PCB's". Although the ground water data from the monitoring wells may support this statement, the seep data from seep # 10 do not, since PCB's have been detected in samples from this seep according to information provided by OEPA - DSW. Seep # 10 appears to be a surface expression of upper aquifer ground water in this area as indicated on cross sections. **Therefore, the plan must be modified to state that AK Steel will further investigate the source of the PCB detections in this seep and determine: (1) if the source area is within the slag processing area, and (2) whether the source area must be removed and properly disposed to eliminate further releases of PCBs, consistent with the requirements of Paragraph 143 of the Order.**

3. PAH, etc. Analyses in Soils

Page 37, 2nd paragraph states that samples will be analyzed for PAHs or metals only if they are found in adjacent boring locations during the Baseline Groundwater Sampling Event. I do not believe this rationale to be relevant to representative sampling. **Modify the plan to reflect that soil samples must be analyzed for all parameters (PCBs, PAHs and metals) regardless of groundwater concentrations.**

4. Locations of Borings

AK Steel's responses to EPA's comments and deficiencies were provided in Appendices A and B of the revised plan. In several instances, I believe information in AK Steel's responses either **is inadequate** or **is inconsistent** with information in the revised plan.

Proposed boring installation activities in the response to "EPA Deficiency 6a" (which requires additional borings in the vicinity of Mill Scale Area 3) do not correspond to the proposed activities in Section 4.4 of the revised plan. AK Steel's response to "EPA Deficiency 6a" proposes two additional hollow-stem auger (HSA) borings, one north of BH07 and one southwest of BH07-S50. However, Section 4.4 of the revised plan specifies two HSA borings immediately west of Mill Scale Area 3, one north and one southwest of

BH07-S50. Modify the plan to correct locations of the HSA borings to correspond to text in work plan and consistent with EPA Deficiency 6a.

The plan proposed no additional borings in the vicinity of BH08 which showed 288 ppm PCB. Modify the plan consistent with EPA comment 6b to site at least 3 additional borings in this location west, north and south of BH08, at a distance of approximately 25 feet from BH08 to sufficiently evaluate the spatial and vertical extent of contamination adjacent to this location both in. **Add these borings.**

The revised plan does not propose additional borings in the vicinity of BH13 and BH13-S50 due to complications from ongoing OMS operations. Modify the plan to sufficiently investigate the spatial and vertical extent of contamination north and west of BH13 and BH13-S50. **Add these borings.**

Further, there was no figure in the revised plan showing all proposed hollow-stem auger borings, hand auger borings, and perched and upper aquifer monitoring wells. **Include such a figure for reference purposes.**

5. GW Flow and Clay Elevation Figures

Several of EPA's February 8, 2001, comments requested review and modification, as necessary, of figures depicting groundwater flow directions, contaminant distribution in the perched zone, and elevation of the surface of the clay. Based on inspection of the figures in the revised plan, AK Steel did review and modify these figures; however, several omissions or inconsistencies still exist. **Figures 9, 10, and 11 must be reviewed, modified and corrected:**

- Figures depicting piezometric data and groundwater flow directions in the perched zone continue to depict groundwater contours that are drawn incorrectly based on the data shown for the perched-zone monitoring wells. It appears that groundwater flow interpretations have been erroneously modified to be consistent with the clay surface elevation contours and in some cases are clearly incorrect. **Make necessary corrections to be accurate.**
- The 650-foot groundwater elevation contour appears to be drawn incorrectly based on the data shown for monitoring wells MDA09P and MDA08P. In Figure 9, the groundwater elevation of MDA09P is 650.17 feet and the groundwater elevation of MDA08P is 647.75 feet, but the 650-foot contour line is mapped much closer to MDA08P than to MDA09P. In Figures 10 and 11, the groundwater elevations for MDA09P are 649.85 feet and 649.25 feet, respectively, and for MDA08P the groundwater elevations are 647.52 feet and 647.61 feet, respectively; however, on both figures the 650-foot contour line is plotted in the area between these two wells. The incorrect placement of the contour results in depiction of the groundwater flow direction as directly toward the interceptor trench; if the 650-foot groundwater contour was positioned correctly, groundwater would appear to be flowing directly west, toward Monroe Ditch. **Correct the contour lines to accurately show ground-water flow direction based upon data.**
- Inconsistencies exist among the contours depicting the elevation of the native silt and clay surface. For example, the map depicts most of the site at a 2-foot contour interval. However, the 652-foot contour line in the northern portion of the site, near Mill Scale Area 1, appears to have been inadvertently omitted, as the 650- and 654-foot contour lines are not separated by a 652-contour. **Correct.**

- Inconsistencies are apparent among these figures depicting the elevation of the clay surface. In some cases, elevation contours are missing. **All clay surface elevation contours must be shown and reviewed for accuracy.**
- These figures use a 5-foot contour interval to depict the piezometric surface. EPA Specific Comment 9 suggested reduction of the contour interval to less than 5 feet. AK Steel's response to this comment states that "a contour interval of less than 5 feet would exaggerate the degree of certainty in the ground water flow conditions shown in the figures..." However, this rationale is inconsistent with the AK Steel's depictions of groundwater flow in the perched zone (Figures 9, 10, and 11), which depict a 2-foot contour interval based on far fewer data points than are available for Figures 12, 13 and 14. A 5-foot interval oversimplifies the complexity of the piezometric surface and "masks" areas of uncertainty regarding the full range of potential localized variations in flow directions. **For these reasons, Figures 12, 13, and 14 should be revised to use a contour interval of 2 feet.**

6. Section 4.4, Page 35, Paragraph 0

The second bullet item proposes two HSA borings in Mill Scale Area 1 and installation of a perched-zone well may be installed if a perched zone is encountered, resulting in one boring east, and one boring south of existing well MDA-02S. However, EPA Deficiency 9 recommends at least four additional borings in the vicinity of Mill Scale Area 1, each with four discrete depth horizons analyzed for the presence of PCBs. The borings proposed in the plan are inconsistent with EPA's request and are inadequate for the following additional reasons:

- The locations do not appear to be adequate to determine if flow to the north from Mill Scale Area 1 is a source of PCBs in Dick's Creek.
- The proposed locations do not appear to be adequate to detect a western component of PCB migration, if such migration is occurring.
- Only three discrete depth horizons are proposed to be sampled. In addition to being inconsistent with EPA's recommendation, the number of proposed sample horizons does not appear sufficient to determine the vertical extent of PCB contamination.

Furthermore, the plan does not propose soil sampling during installation of the perched-zone well due to the availability of existing soil analytical data collected during the drilling/installation of nearby well MDA03S. However, well MDA03S is approximately 1,000 feet south of the proposed perched-zone monitoring well. **The Plan must be modified to include borings north and west of Mill Scale Area 1 and additional soil sampling in this area.**

7. Section 4.4, Page 36, Paragraph 0.

The second bullet item proposes completing two hand auger borings at the "head" of the former drainage path in the low area southwest of the former oil separator ponds, but does not indicate exactly where the head of the drainage path is located. AK Steel's response to EPA Deficiency 8 states that two hand auger borings will be installed in the marshy area south of the former oil separation ponds, at the eastern end of

the former drainage path. Figures provided with the revised plan do not identify the eastern extent of the former drainage path. Due to the ambiguity regarding the boundaries of the former drainage path, it is unclear exactly where the hand auger borings will be located. **The plan must be modified to clearly identify the boring locations.**

Furthermore, EPA Deficiency 8 requests collection of samples for analysis from depths of 0-2 feet, 2-4 feet, 4-6 feet and 6-8 feet in a radius of 10 to 25 feet around location SS01. AK Steel's response to this request states that no additional borings need to be installed in the vicinity of SS01 because historic data have already delineated the extent of PCB contamination at this location. However, EPA notes in Deficiency 8 that at location SS01-S14, the boring located furthest south in this location, PCBs were detected in soil samples at a concentration of 30 parts per million (ppm) at a depth of 3 feet. **The plan must be modified to include borings in the vicinity of SS01 to further delineate the vertical extent of PCB contamination and the southward lateral extent of PCBs in this location.**

8. Appendix A, AK Steel's Response to EPA Deficiency 6c.

This response states that a soil sample was collected 50 feet north of BH13. PCBs were detected at a concentration of 0.064 mg/kg in soil samples collected at this location. The response proposes one boring west of BH13 during replacement of perched monitoring well MDA24P. This proposed boring is not mentioned in the revised plan. The response does not propose additional borings to be conducted in this area due to complications from ongoing OMS operations. EPA Deficiency 6c states that further investigation is warranted west and north of borings BH13 and BH13-S50. **Modify the plan to identify that these borings will be installed as recommended by EPA.**

9. Appendix G, Standard Operating Procedure (SOP)

a. SOP 19, Borehole Permeability Testing

This SOP discusses methods to be used for performing borehole permeability (slug) tests and for analysis of data from these tests. AK Steel's response to EPA Specific Comment 5 cites several American Society for Testing and Materials (ASTM) standards for conducting slug tests. However, SOP 19 does not cite these standards. SOP 19 must be modified to include the complete references to the standards. In addition, ASTM Standard D5881 is incorrectly cited in AK Steel's response as the standard for performing slug tests in unconfined aquifers and as the standard for performing slug tests in confined aquifers by critically damped well response. ASTM standard D5881 is titled "Standard Test Method for (Analytical Procedure) Determining Transmissivity of Confined Nonleaky Aquifers by Critically Damped Well Response to Instantaneous Change in Head (Slug)" (ASTM 1995). The correct guideline for performing slug tests in unconfined aquifers is ASTM standard D5912-96e1, "Standard Test Method for (Analytical Procedure) Determining Hydraulic Conductivity of an Unconfined Aquifer by Overdamped Well Response to Instantaneous Change in Head (Slug)" (ASTM 1996). **This inconsistency must be corrected and SOP 19 modified as necessary.**

b. SOP 4 (Appendix G) Monitoring Well Development

Procedure 9-A. Bailer Method & Procedure 9B Pump Method

Page 6/29 & 7/29

Turbidity meters were not included as equipment needed. However, the procedures indicated that

turbidity data would be obtained. Failure to include the meter in the equipment list is an assumed oversight. **Correct.**

c. SOP-10

Step 5 in Procedure 9-A Bailer Method should be applied to all ground water sampling. SOP-10 Sample Filtration for Metals Analysis references SOP-13 steps 1-11 for sample collection although the SOP-10 is used for aqueous sampling and SOP-13 is used for soils sampling. **Modify the SOP to correct the inconsistencies.**

The U.S. EPA reserves the right to require additional work pending the results of the approved Plan, and information obtained from the other ongoing investigations at the Facility. The vertical and horizontal extent of PCB, PAH or other hazardous constituents source(s) within the slag processing area, and, as applicable, other areas of the AK Steel facility must be adequately defined so that remedial decision making can proceed.

This approval with modifications by U.S. EPA requires AK Steel to take the actions required by the plan as modified by U.S. EPA, consistent with paragraph 163 of the Order.

Please submit 2 copies of the revised plan to U.S. EPA and 2 copies to Harold O'Connell at the OEPA Southwest District Office. If you have any questions regarding the above, please contact Gary Cygan of our staff, who is the AK Steel project manager for purposes of this Order. He may be contacted at (312) 886-5902.

Sincerely yours,

Joseph Boyle, Chief
Enforcement and Compliance Assurance Branch

cc: Harold O'Connell
Ohio Environmental Protection Agency

Bob Karl, Attorney
Ohio Attorney General's Office

AK5 043375

Mike M
commits

Gary - still looks like
different facts. PLS
revise to 1 font.

Other changes I made are
shown.

DE-9J



June 20, 2001

VIA FACSIMILE AND
CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Carl Batliner
AK Steel - Middletown Works
1801 Crawford Avenue
Middletown, OH 45043

Re: Soil and Groundwater Investigation Plan Submitted Under Administrative Order Pursuant
to Section 7003(a) of the Resource Conservation and Recovery Act, 42 U.S.C. § 6973(a)
AK Steel, Middletown Works, 1801 Crawford Avenue, Middletown, OH
USEPA ID Number OHD 004 234 480

Dear Mr. Batliner:

We have reviewed the Soil and Groundwater Investigation Plan submitted March 16, 2001,
pursuant to paragraphs 143 and 146 through 150 of the subject Order on behalf of AK Steel by
Arcadis Geraghty and Miller. Paragraphs 143 and 146 require approval of the plan by U.S.
EPA, pursuant to procedures specified in paragraphs 162 through 164 of the Order.

Please be advised that your submission, the Soil and Groundwater Investigation Plan, is hereby
approved with modifications. You must address the following **modifications** in a revised final
plan, to be submitted to the U.S. EPA with a copy to the Ohio Environmental Protection Agency
(OEPA) **within 20 days** of your receipt of this letter. **Implementation of the approved plan,**
with the approved modifications, must begin immediately.

We remind you that under the Order, we have the right to impose final modifications and to
commence any portion of the work ourselves and recoup the costs incurred in doing that work
from your company.

Modifications

1. Section 1.1 Site Description:

All of the discussion in Sections 1.1 Site Description and 1.2 Investigation Objectives uses the phrases
"OMS operations area" or "OMS area" and Section 1.1 describes the OMS area as "The OMS operations
are located south of Oxford State Road and east of Yankee Road, immediately east and northeast of
Monroe Ditch and south of Dick's Creek." This site description excludes the closed landfills of concern

AK5 043376

that are located west of the Monroe Ditch. The OMS area is the only area mentioned in the Site Description on page 1. **Correct the description to include the landfill area west of Monroe Ditch.** Section 1.2 Investigation Objectives, 1st paragraph, refers to the 7003 Order Paragraphs 143 through 150 (Soil Investigation and Hydrogeologic Investigation). Paragraph 143 in the 7003 Order requires that AK Steel "submit for review and approval a work plan...to identify, remove and properly dispose of all remnant sources of PCBs in soils from locations at the AK Steel facility which may contribute to releases of PCBs to Dick's Creek, the landfill tributary, or pose an unacceptable risk to human health and the environment." Paragraph 146 of the 7003 order relates to the Hydrogeologic Investigation, and uses the phrase "in the vicinity of the slag processing area." **The site description will be modified to include at least the landfills west of the landfill tributary, and any other area that is covered by paragraphs 143 and 146 of the 7003 order.**

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4. Locations of Borings

AK Steel's responses to EPA's comments and deficiencies were provided in Appendices A and B of the revised plan. In several instances, I believe information in AK Steel's responses either **is inadequate** or **is inconsistent** with information in the revised plan.

Proposed boring installation activities in the response to "EPA Deficiency 6a" (which requires additional borings in the vicinity of Mill Scale Area 3) do not correspond to the proposed activities in Section 4.4 of the revised plan. AK Steel's response to "EPA Deficiency 6a" proposes two additional hollow-stem auger (HSA) borings, one north of BH07 and one southwest of BH07-S50. However, Section 4.4 of the revised plan specifies two HSA borings immediately west of Mill Scale Area 3, one north and one

southwest of BH07-S50. **Modify the plan to correct locations of the HSA borings to correspond to text in work plan and consistent with EPA Deficiency 6a.**

The plan proposed no additional borings in the vicinity of BH08 which showed 288 ppm PCB. Modify the plan consistent with EPA comment 6b to site at least 3 additional borings in this location west, north and south of BH08, at a distance of approximately 25 feet from BH08 to sufficiently evaluate the spatial and vertical extent of contamination adjacent to this location both in. **Add these borings.**

The revised plan does not propose additional borings in the vicinity of BH13 and BH13-S50 due to complications from ongoing OMS operations. Modify the plan to sufficiently investigate the spatial and vertical extent of contamination north and west of BH13 and BH13-S50. **Add these borings.**

Further, there was no figure in the revised plan showing all proposed hollow-stem auger borings, hand auger borings, and perched and upper aquifer monitoring wells. **Include such a figure for reference purposes.**

5. GW Flow and Clay Elevation Figures

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contour. **Correct.**

- Inconsistencies are apparent among these figures depicting the elevation of the clay surface. In some cases, elevation contours are missing. **All clay surface elevation contours must be shown and reviewed for accuracy.**
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The second bullet item proposes two HSA borings in Mill Scale Area 1 and installation of a perched-zone well may be installed if a perched zone is encountered, resulting in one boring east, and one boring south of existing well MDA-02S. However, EPA Deficiency 9 recommends at least four additional borings in the vicinity of Mill Scale Area 1, each with four discrete depth horizons analyzed for the presence of PCBs. The borings proposed in the plan are inconsistent with EPA's request and are inadequate for the following additional reasons:

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Furthermore, the plan does not propose soil sampling during installation of the perched-zone well due to the availability of existing soil analytical data collected during the drilling/installation of nearby well MDA03S. However, well MDA03S is approximately 1,000 feet south of the proposed perched-zone monitoring well. **The Plan must be modified to include borings north and west of Mill Scale Area 1 and additional soil sampling in this area.**

7. Section 4.4, Page 36, Paragraph 0.

AK5 043379

The second bullet item proposes completing two hand auger borings at the “head” of the former drainage path in the low area southwest of the former oil separator ponds, but does not indicate exactly where the head of the drainage path is located. AK Steel’s response to EPA Deficiency 8 states that two hand auger borings will be installed in the marshy area south of the former oil separation ponds, at the eastern end of the former drainage path. Figures provided with the revised plan do not identify the eastern extent of the former drainage path. Due to the ambiguity regarding the boundaries of the former drainage path, it is unclear exactly where the hand auger borings will be located. **The plan must be modified to clearly identify the boring locations.**

Furthermore, EPA Deficiency 8 requests collection of samples for analysis from depths of 0-2 feet, 2-4 feet, 4-6 feet and 6-8 feet in a radius of 10 to 25 feet around location SS01. AK Steel’s response to this request states that no additional borings need to be installed in the vicinity of SS01 because historic data have already delineated the extent of PCB contamination at this location. However, EPA notes in Deficiency 8 that at location SS01-S14, the boring located furthest south in this location, PCBs were detected in soil samples at a concentration of 30 parts per million (ppm) at a depth of 3 feet. **The plan must be modified to include borings in the vicinity of SS01 to further delineate the vertical extent of PCB contamination and the southward lateral extent of PCBs in this location.**

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9. Appendix G, Standard Operating Procedure (SOP)

a. SOP 19, Borehole Permeability Testing

This SOP discusses methods to be used for performing borehole permeability (slug) tests and for analysis of data from these tests. AK Steel’s response to EPA Specific Comment 5 cites several American Society for Testing and Materials (ASTM) standards for conducting slug tests. However, SOP 19 does not cite these standards. SOP 19 must be modified to include the complete references to the standards. In addition, ASTM Standard D5881 is incorrectly cited in AK Steel’s response as the standard for performing slug tests in unconfined aquifers and as the standard for performing slug tests in confined aquifers by critically damped well response. ASTM standard D5881 is titled “Standard Test Method for (Analytical Procedure) Determining Transmissivity of Confined Nonleaky Aquifers by Critically Damped Well Response to Instantaneous Change in Head (Slug)” (ASTM 1995). The correct guideline for performing slug tests in unconfined aquifers is ASTM standard D5912-96e1, “Standard Test Method for (Analytical Procedure) Determining Hydraulic Conductivity of an Unconfined Aquifer by Overdamped Well Response to Instantaneous Change in Head (Slug)” (ASTM 1996). **This inconsistency must be corrected and SOP 19 modified as necessary.**

b. SOP 4 (Appendix G) Monitoring Well Development

Procedure 9-A. Bailer Method & Procedure 9B Pump Method

Page 6/29 & 7/29

Turbidity meters were not included as equipment needed. However, the procedures indicated that turbidity data would be obtained. Failure to include the meter in the equipment list is an assumed oversight. **Correct.**

c. SOP-10

Step 5 in Procedure 9-A Bailer Method should be applied to all ground water sampling. SOP-10 Sample Filtration for Metals Analysis references SOP-13 steps 1-11 for sample collection although the SOP-10 is used for aqueous sampling and SOP-13 is used for soils sampling. **Modify the SOP to correct the inconsistencies.**

The U.S. EPA reserves the right to require additional work pending the results of the approved Plan, and information obtained from the other ongoing investigations at the Facility. The vertical and horizontal extent of PCB, PAH or other hazardous constituents source(s) within the slag processing area, and, as applicable, other areas of the AK Steel facility must be adequately defined so that remedial decision making can proceed.

This approval with modifications by U.S. EPA requires AK Steel to take the actions required by the plan as modified by U.S. EPA, consistent with paragraph 163 of the Order.

Please submit 2 copies of the revised plan to U.S. EPA and 2 copies to Harold O'Connell at the OEPA Southwest District Office. If you have any questions regarding the above, please contact Gary Cygan of our staff, who is the AK Steel project manager for purposes of this Order. He may be contacted at (312) 886-5902.

Sincerely yours,

Joseph Boyle, Chief
Enforcement and Compliance Assurance Branch

cc: Harold O'Connell
Ohio Environmental Protection Agency

Bob Karl, Attorney
Ohio Attorney General's Office

AK5 043381

bcc: Robert Guenther, Associate Regional Counsel, C-14J

Gary Cygan, Project Manager, DE-9J
 Michael Mikulka, DE-9J

Robert Darnell, Trial Attorney
 U.S. Department of Justice

ENFORCEMENT AND COMPLIANCE ASSURANCE BRANCH

| SECRETARY | SECRETARY | SECRETARY | SECRETARY | SECRETARY | SECRETARY |
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| AUTHOR/ TYPIST | COMPLIANCE SECTION 1 SECTION CHIEF | COMPLIANCE SECTION 2 SECTION CHIEF | CA SECTION SECTION CHIEF | ECAB BRANCH CHIEF | WPTD DIVISION DIRECTOR |
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AK5 043382

Draft OH CD.
5/18/2001

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

| | | |
|------------------------------|---|-----------------------|
| THE UNITED STATES OF AMERICA | : | CASE NO. C-I-00-530 |
| | : | |
| Plaintiff, | : | JUDGE HERMAN J. WEBER |
| | : | |
| and | : | |
| | : | |
| STATE OF OHIO | : | |
| | : | |
| Plaintiff-Intervenor, | : | |
| | : | |
| vs. | : | |
| | : | |
| AK STEEL CORPORATION | : | |
| | : | |
| Defendant. | : | |

CONSENT DECREE AND FINAL JUDGMENT ENTRY

WHEREAS, Plaintiff, United States of America, on behalf of the United States Environmental Protection Agency, having filed the Complaint herein on July 29, 2000, against Defendant, AK Steel Corporation ("AK Steel"), alleging violations of the Clean Air Act ("CAA"), 42 U.S.C. § 7401 *et seq.*, the Clean Water Act ("CWA"), 33 U.S.C. § 1311 *et seq.*, the Resource Conservation And Recovery Act ("RCRA"), 42 U.S.C. § 6901 *et seq.*, and the terms and conditions of its National Pollutant discharge elimination System ("NPDES") Permit Nos. 1ID00001*BD, 1ID00001*CD, 1ID00001*DD, 1ID00001*ED and 1ID00001*FD;

WHEREAS, the State of Ohio, ("Ohio") having moved to intervene as a plaintiff and this Court having granted said Motion;

WHEREAS Ohio's First Amended Complaint against AK Steel alleged violations of the CAA

AK5 043186

MAY 18, 2001 DRAFT CONSENT ORDER

and the CWA; Ohio Revised Code ("R.C.") Chapters 3704, 3734 and 6111; and the terms and conditions of its currently and previously effective NPDES Permits; and

WHEREAS the parties having agreed that settlement of this matter is in the public interest and that entry of this Consent Decree without further litigation is the most appropriate means of resolving this matter;

NOW, THEREFORE, before the taking of testimony, upon the pleadings, and without adjudication of any issues of fact or law, and upon consent of the parties hereto, it is hereby ORDERED AND DECREED as follows:

I. DEFINITIONS

As used in this Consent Decree:

"Air contaminant source" or **"source"** has the same meaning as set forth in R.C. 3704.01(C) and Ohio Administrative Code ("Ohio Adm. Code") 3745-31-01(D) and 3745-35-01(B)(1).

"Area of Immediate Concern" means that area designated in the map attached hereto as Attachment A.

"Bypass" shall mean an overflow, diversion or other such discharge of industrial waste or other wastes from Site treatment works.

"Consent Decree" shall mean this Consent Decree and Final Judgment Entry and all appendices hereto. In the event of conflict between this Consent Decree and any appendix, the Consent Decree shall control.

"Contractor" shall mean the individual(s) or company or companies retained by or on behalf of Defendant to undertake and complete the work required by this Consent Decree.

MAY 18, 2001 DRAFT CONSENT ORDER

"Defendant" or **"AK Steel"** shall mean the AK Steel Corporation.

"Director" shall mean Ohio's Director of Environmental Protection.

"Effective Date" shall mean the date the United States District Court for the Southern District of Ohio enters this Consent Decree.

"Navigable waters of the United States" means those streams and other waters as defined in Section 502(7) of the CWA, 33 U.S.C. § 1362((7)).

"Ohio EPA" means the Ohio Environmental Protection Agency.

"Permit to Install" or **"PTI"** has the same meaning as set forth in Ohio Adm. Code Chapter 3745-31.

"Permit to Operate" or **"PTO"** has the same meaning as set forth in Ohio Adm. Code Chapter 3745-35.

"Plaintiff" means the United States of America, by and through the Department of Justice.

"Plaintiff-Intervenor" means the State of Ohio, Ohio EPA, by and through the Attorney General of Ohio.

"Site" or **"Facility"** shall refer to property owned and/or operated by Defendant in Middletown, Butler County, Ohio, where the storage and/or disposal of waste material has occurred and/or where the discharge or placement of waste material to waters of the State has occurred, including any area inside or outside of the property where waste material has migrated. The Site has the mailing address of 1801 Crawford Street, Middletown, Butler County, Ohio and includes, but is not limited to, the following areas: steel manufacturing facility, including north, south, and melt plant areas, active residual waste landfills, closed

MAY 18, 2001 DRAFT CONSENT ORDER

landfills, and Olympic Milling Services (“OMS”) formerly the International Milling Services slag handling facility. The Site is depicted generally on the attached map, “Attachment ____”.

“Spill” shall mean the accidental spilling, leaking, pumping, pouring, emitting or dumping of waste material, or material which, when spilled, becomes waste material, into or to land, or waters of the State.

“State” shall mean the State of Ohio by and through its Attorney General on behalf of Ohio EPA.

“Surface water(s)” shall mean those streams and other waters as defined in Ohio Adm. Code 3745-1-02(B)(77) and all surface waters of the United States.

“Title V Permit” has the same meaning as set forth in Ohio Adm. Code Chapter 3745-77.

“Treatment works” shall mean the wastewater treatment plants located at the Site and the associated sewers and pumping stations as defined in R.C. 6111.01(F).

“Unauthorized discharges” shall mean the discharge or bypass of industrial waste or other wastes not in accordance with Defendant’s applicable NPDES permit, with Section 402, or with 33 U.S.C. § 1342 , or with R.C. Chapter 6111.

“U.S. EPA” means the United States Environmental Protection Agency.

“Waste material” shall mean (1) any “industrial waste” as that term is defined under R.C. 6111.01(C); (2) any “other wastes” as that term is defined under R.C. 6111.01(D); (3) any “hazardous waste” as that term is defined under R.C. 3734.01(J); and (4) any “hazardous waste constituent” as that term is defined under Ohio Adm. Code 3745-50-10(A)(46). Waste material includes, but is not limited to, polychlorinated biphenyls (“PCBs”), PAHs, metals and any media that as a result of AK Steel’s activities has a pH less than 6.5 S.U. or greater than 9.0 S.U.

MAY 18, 2001 DRAFT CONSENT ORDER

“Waters of the State” shall mean those surface and underground waters as defined in R.C. 6111.01(H).

II. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to Section 113(b) of the CAA, 42 U.S.C. § 7413, Section 309(b) and (d) of the CWA, 33 U.S.C. § 1319(b) and (d) and 1365(b); and 28 U.S.C. §§ 1331, 1345, and 1355. This Court has jurisdiction over the claims asserted under R.C. Chapters 3704, 3734, 3767 and 6111 and the rules adopted thereunder pursuant to 28 U.S.C. § 1367 (supplemental jurisdiction). This Court has jurisdiction over the parties. Venue is proper in this Court. The Complaints state a claim upon which relief can be granted.

III. PERSONS BOUND

2. The provisions of this Consent Decree shall apply to and be binding upon Defendant, their officers, directors, agents, employees, successors and assigns and any person having notice of this Consent Decree who is, or will be acting in concert or participation with AK Steel. Defendant is enjoined and ordered to provide a copy of this Consent Decree to each contractor they employ to perform work itemized herein. AK Steel shall provide a copy of this Consent Decree to any successor in interest at least thirty (30) days prior to transfer of that interest, and simultaneously shall verify in writing to the U.S. EPA and Ohio EPA that such notice has been given.

IV. SATISFACTION OF LAWSUIT AND RESERVATION OF RIGHTS

3. The United States alleges in its complaint that AK Steel has operated its facilities on site in violation of the CAA and the CWA and the effluent limitations contained in its applicable NPDES permits and has violated RCRA through the storage and disposal of hazardous wastes. The

AK5 043190

MAY 18, 2001 DRAFT CONSENT ORDER

State of Ohio alleges in its first amended complaint that Defendant has operated its facilities on site in a manner resulting in violations of Ohio and Federal air pollution control laws and water pollution control laws and has violated Ohio hazardous waste laws.

4. Except as otherwise provided in this Consent Decree, compliance with the terms of this Consent Decree shall constitute full satisfaction of any civil liability of Defendant to Plaintiff and Plaintiff-Intervenor for all claims alleged in the Complaints.

5. Nothing in this Consent Decree, including the imposition of stipulated civil penalties, shall limit the authority of the United States and/or the State of Ohio to:

- a) Seek relief for claims or conditions not alleged in the Complaints;
- b) Seek relief for claims or conditions alleged in the Complaints that occur after the entry of this Consent Decree;
- c) Enforce this Consent Decree through a contempt action or otherwise for violations of this Consent Decree;
- d) Bring any action against Defendant or against any other person, under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, 42 U.S.C. § 9601, *et seq.* and/or R.C. 3734.20 through 3734.27 to: (1) recover natural resource damages, and/or (2) order the performance of, and/or recover costs for any removal, remedial or corrective activities not conducted pursuant to the terms of this Consent Decree;
- e) Take any action authorized by law against any person, including Defendant, to eliminate or mitigate conditions at the Facility that may present an imminent threat to the public health or welfare, or the environment.

V. PERMANENT INJUNCTION

V.A General Injunctions

7. Defendant is permanently enjoined and ordered to immediately comply with the

MAY 18, 2001 DRAFT CONSENT ORDER

requirements of the CWA and R.C. Chapter 6111 and the rules adopted thereunder, and its currently effective NPDES permit, and any subsequent renewals or modifications thereof.

8. Except as otherwise provided in this Consent Decree, the Defendant is hereby enjoined and ordered to immediately and permanently comply with R.C. Chapter 3704 and the regulations adopted thereunder, including all terms and conditions of the Defendant's currently effective Permits to Install and Permits to Operate, and any subsequent renewals or modifications thereafter. Specifically, the Defendant agrees to refrain and is hereby permanently enjoined from "installing" or "modifying" any air contaminant source, as those terms are defined by Ohio Adm. Code 3745-31-01(LL) and (VV), at the Facility without first applying for and obtaining a Permit to Install from the Director in accordance with Ohio Adm. Code 3745-31-02. In addition, the Defendant agrees to refrain and is hereby permanently enjoined from operating any air contaminant source without first applying for and receiving either a Permit to Operate or Title V permit from the Director in accordance with Ohio Adm. Code Chapters 3745-35 or 3745-77, as applicable. Further, the Defendant agrees and is hereby permanently and immediately enjoined and ordered to comply with all terms and conditions of all Permits to Install and Permits to Operate which are issued to the Defendant by the Director, including but not limited to all reporting requirements, all reasonably available control measures and all emissions limitations.

9. Defendant is enjoined and ordered to, immediately upon entry of this Consent Decree, properly operate and maintain each air contaminant source and piece of control equipment at the facility.

10. In addition to the requirements of paragraph number 8, Defendant is enjoined and ordered to, immediately upon entry of this Consent Decree, properly operate and maintain all existing

MAY 18, 2001 DRAFT CONSENT ORDER

and new air pollution control equipment at its facility for all of its existing and new air contaminant sources.

11. Defendant is enjoined and ordered to immediately and permanently comply with the requirements of R.C. Chapter 3734 and the rules adopted thereunder.

V.B. General Injunctions Regarding Submittals and Actions taken under this Consent Order

12. Unless otherwise instructed, all investigations, remediations and removal actions required under this Consent Decree and the 7003 Order shall address PAHs and/or other waste materials in addition to PCBs and solid wastes.

13. All documents and/or workplans related to the investigations, remediations and removals described and/or required in this Consent Decree shall be submitted for Ohio EPA review and approval pursuant to Section VIII, Submittal of Documents and Section IX, Review of Submittals of this Decree.

14. All plans required under this Consent Decree and the 7003 Order that require sampling and analysis shall describe the proposed sampling locations, the sampling and analytical methods, the constituents subject to sampling and analysis, and shall include a quality assurance/quality control (QA/QC) plan that follows the most recent U.S. EPA and Ohio EPA approved QA/QC guidance as listed in Appendix B of this Consent Decree.

15. All plans submitted for approval pursuant to this Consent Decree or the 7003 Order shall contain a schedule of implementation that shall be enforceable under this Consent Decree.

15. Defendant shall give Ohio EPA a seven day advance notice prior to sample collection activities necessary under this Decree and the 7003 Order. In addition, AK Steel shall provide split samples to Ohio EPA and U.S. EPA upon request.

MAY 18, 2001 DRAFT CONSENT ORDER

16. Within thirty days of the entry of this Consent Decree, AK Steel shall submit to Ohio EPA and U.S. EPA a document listing any and all environmental studies which may have already been performed at the Facility. The document shall identify the title, date and entity performing the studies, and any and all reports, work plans or other documents generated or submitted to AK Steel as a result of conducting or having conducted such studies. Additionally, AK Steel shall include in such document a summary of the findings of each study and document, including but not limited to identification of the findings and conclusions of such studies, and any actions taken as a result of such studies. AK Steel shall make the listed documents available to Ohio EPA and U.S. EPA upon request.

17. In completing the activities required under this or any other provision of this Consent Decree, Defendant may rely on data, results, findings, or conclusions generated through any effort which is not required by this Consent Decree only if Defendant can demonstrate to the satisfaction of U.S. EPA and Ohio EPA that such data, results, findings, or conclusions are technically valid and, had those efforts been conducted pursuant to this Consent Decree, would have complied with the standards and requirements as described in this Consent Decree and in accordance with the guidance listed in Appendix B.

18. Any activities proposed by AK Steel pursuant to this Consent Decree or the 7003 Order shall planned, developed and performed in conformity with appropriate U.S. EPA and Ohio EPA guidance, including those listed in Appendix B of this ConsentDecree.

V.C. Area of Immediate Concern

6. Defendant is enjoined and ordered to comply with the 7003 Administrative Order ("7003 Order") issued by U.S. EPA on August 17, 2000 and any subsequent modifications thereof. A copy of the 7003 Order is attached and incorporated by reference.

AK5 043194

MAY 18, 2001 DRAFT CONSENT ORDER

19. On or before July 30, 2001, Defendant shall submit to Ohio EPA an approvable PTI application with detail plans prepared in accordance with Ohio Adm. Code Chapter 3745-31 for the current interceptor trench and waste water treatment system at the Site. Defendant shall submit a timely and approvable PTI application, prepared in accordance with Ohio Adm. Code Chapter 3745-31, for any future modifications to the current interceptor trench and waste water treatment system which require a PTI.

20 Defendant shall not cause materials to enter the waters of Dicks Creek from outfall 002 that produce color or cause the deposition of solids in violation of Ohio Adm. Code 3745-1-04(A) and (C).

21. On or before July 1, 2001, Defendant shall submit to Ohio EPA a document that demonstrates the backflow from the OMS water pump house cannot discharge to Dicks Creek via outfall 002. The demonstration document shall, at a minimum, contain an engineering report from a certified professional engineer. If the demonstration cannot be made to Ohio EPA's satisfaction, AK steel shall cease the discharge from the pump house via outfall 002.

22. On or before July 1, 2001, Defendant shall submit to Ohio EPA with an approvable plan that characterizes the area impacted by discharges from outfall 015. Within thirty days after completing the work required by the characterization plan, Defendant shall develop and submit to Ohio EPA a work plan for the remediation of the area impacted by discharges from outfall 015. After Ohio EPA approves the work plan to remediate the area impacted by discharges from outfall 015, Defendant shall implement the work plan and contact Ohio EPA one week prior to the scheduled remediation of the area impacted by outfall 015.

23. Defendant is enjoined and ordered to prevent groundwater and/or surface water runoff

MAY 18, 2001 DRAFT CONSENT ORDER

with a pH less than 6.5 S.U. or greater than 9.0 S.U. from entering surface waters.

24. Defendant is enjoined and ordered to remove where practicable otherwise contain any remaining waste materials that may contribute to the groundwater and/or leachate migration to the landfill tributary (Monroe Ditch) or Dicks Creek, curtail any actions which are either causing or contributing to such waste materials migration, and remove the waste materials discharged to either Monroe Ditch or Dicks Creek. Defendant is enjoined and ordered to develop and submit to Ohio EPA a work plan for the removal or otherwise contain any remaining waste materials.

25. In addition to the above actions, Defendant shall, at a minimum, undertake the actions described below.

V.C.1. Immediate Actions

26. On the effective date of this Consent Decree, AK Steel shall take such actions as are necessary to prevent access to the landfill tributary and in Dicks Creek. AK Steel shall continue to restrict access until such time as the risk associated with the landfill tributary and Dicks Creek have been defined and associated contamination remediated. In addition, Defendant shall take any additional actions to restrict access to the landfill tributary and in Dicks Creek as deemed necessary by Ohio EPA.

27. On the effective date of this Consent Decree, AK Steel shall prevent any treated, partially treated, and/or untreated effluent water from the current interceptor trench and waste water treatment system from entering surface water or other waters of the State in accordance with Paragraph 124 of the 7003 Order. In addition, Defendant shall operate and maintain the current interception trench and wastewater treatment system, and monitor its effectiveness, for removing specific contaminants (TBD DSW) including, but not limited to, filter condition and analytical results of treated

MAY 18, 2001 DRAFT CONSENT ORDER

effluent water, at least weekly. Defendant shall record this information and submit it quarterly to Ohio EPA, SWDO/DSW.

28. Further, Defendant shall notify the Ohio EPA spill line at (800) 282-9378 within one (1) hour of the discovery of the failure of the current interceptor trench and waste waste treatment system, or its operation, to collect or treat the seepage or effectively remove PCBs, PAHs, and waste materials [to below Ohio EPA approved method detection limits] from the collected seepage. Additionally, Defendant shall notify SWDO/DSW as identified in **Section VIII**, Document Submittal, within the next business day of the discovery of such failure. Defendant shall within five (5) business days of the failure of the current interceptor trench and waste water treatment system, or its operation, submit to SWDO/DSW a report of the date and nature of the system failure, and of the repairs or other remedial actions performed.

29. Within thirty days of the entry of this Consent Decree, Defendant shall develop and submit for approval a plan for implementing those activities in Paragraphs 123 through 126 of the 7003. If contamination is found that poses an unacceptable risk to human health or ecological receptors, AK Steel shall submit an addendum to the Dicks Creek remediation work plan identified in Paragraph 151 of the 7003 Order to address the contamination.

30. In addition to other applicable notification and reporting requirements which apply to Defendant under State, federal or local authority, Defendant shall make a report to the Ohio EPA spill line at (800) 282-9378 within one (1) hour of discovery of any actual or suspected discharge of PCBs, PAHs and/or other waste materials seepage to surface waters. Additionally, Defendant shall notify the SWDO/DSW (as identified in Section VIII, Submittal of Documents), during normal business hours before or during the next business day after discovery of any actual or suspected discharge of PCBs,

MAY 18, 2001 DRAFT CONSENT ORDER

PAHs and/or other waste materials seepage to surface waters. Suspected discharge includes, among other things, observation of any white precipitate seeping to or within waters of the State.

V.C.2. Sediment and Surface Water Investigation

31. Within thirty days of the effective date of this Decree, Defendant shall submit to Ohio EPA an additional plan to investigate the nature and extent of contamination of the flood plain soils adjacent to Dicks Creek.

32. In addition to the requirements in Paragraph 137 of the 7003 Order, the Sediment Sampling Plan shall include proposed methodologies and all associated inputs for risk calculations sufficient to determine the chemical concentrations of waste materials in floodplain soils which pose an unacceptable risk to human health and/or ecological receptors.

V.C.3. Soil Investigation

33. Within 30 days after the effective date of this Consent Decree, AK Steel shall submit an additional soil investigation workplan (Comprehensive Soil Investigation Plan). The Comprehensive Soil Investigation Plan shall encompass a soil investigation, including on and off site and adjacent to Dicks Creek, identifying all waste material sources in locations at the facility that may be contributing to releases of waste materials to surface water in the Area of Immediate Concern. Within thirty days of completing the work required in the Comprehensive Soil Investigation Plan, Defendant shall submit a Comprehensive Soil Remediation Plan. The Comprehensive Soil Remediation Plan shall include plans for the removal of contaminated soils, where practicable, or for plans to otherwise contain any remaining waste materials where removal is not practicable. Defendant shall undertake additional remedial action(s) as approved by Ohio EPA if Ohio EPA determines, from the data compiled under the provisions of this Consent Decree and/or the 7003 Order, that any other waste management unit or

MAY 18, 2001 DRAFT CONSENT ORDER

source of contamination is impacting the water quality in Dicks Creek.

V.C.4 Hydrogeologic Investigation

34. The groundwater Plan described in Paragraph 146 of the 7003 Order shall be amended to include provisions to eliminate the seepage of groundwater contaminated with PAHs and/or other waste materials to surface waters.

V.C.5. Biological Monitoring

35. In accordance with the requirements of Paragraphs 159 to 161 of the 7003 Order, Defendant's investigation of biological and water quality conditions in Dicks Creek shall include an investigation of the presence of PCBs, PAHs, other waste materials and total recoverable metals in sediments and surface waters of Dicks Creek and contamination in the area of Monroe Ditch and the AK Steel landfill. Defendant shall also collect sampling information related to outfalls 002 and 003 and other upstream locations which are possible past or current sources of PCBs.

36. After all information has been obtained pursuant to the Biological Monitoring requirements of the 7003 Order and this Consent Decree, Defendant shall submit a habitat restoration plan pursuant to Section VIII, Submittal of Documents for Ohio EPA approval in accordance with Section IX, Review of Submittals. Thereafter, Defendant is enjoined and ordered to implement the approved habitat restoration plan.

V.D. Air Contaminant Source Compliance Schedule

37. Defendant is enjoined and ordered to bring Source Nos. P925 (No. 3 blast furnace), P926 (BOF vessel number 15) and P927 (BOF vessel number 16) into compliance with all applicable law and permits by installing in accordance with the following schedule control that are sufficient to comply with the U.S EPA's Maximum Achievable Control Technology ("MACT") standards for iron

MAY 18, 2001 DRAFT CONSENT ORDER

and steel mills:

| | <u>TASK</u> | <u>DATE</u> |
|----|---|--|
| a) | Submit final control plan | on or before 30 days after entry of this Order |
| b) | Solicit bids for contracts | on or before ???????? |
| c) | Award contracts | on or before ???????? |
| d) | Submit progress report | on or before ???????? |
| e) | Initiate on-site construction | on or before ???????? |
| f) | Submit progress report | on or before ???????? |
| g) | Complete on-site construction or installation | on or before June 30, 2003 |
| h) | Achieve and demonstrate final compliance by testing, in accordance with paragraph 37. | on or before July 31, 2003 |

Defendant is enjoined and ordered to specify in the control plan submitted in accordance with the paragraph that the air pollution control equipment is designed to meet the U.S. EPA's MACT standards for iron and steel mills.

38. Defendant is enjoined and ordered to conduct stack tests on Source Nos. P925, P926 and P927 in accordance with Ohio Adm. Code 3745-15-04 and in accordance with the following schedule:

- a) On or before 30 days of the date specified in paragraph 37.h. of this Decree, Defendant shall submit an Intent to Test ("ITT") notification to the Hamilton County Department of Environmental Services ("HCDES"). The ITT notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests.

AK5 043200

MAY 18, 2001 DRAFT CONSENT ORDER

- b) Failure to submit such notification for review and approval prior to the tests may result, in the sole discretion of HCDES, in HCDES' refusal to accept the results of the emission tests.
- c) Personnel from HCDES office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- d) On the date specified in paragraph number 37.h. of this Decree, Defendant shall conduct the stack tests in accordance with both the ITT and Ohio Adm. Code Rule 3745-15-04.
- e) On or before 90 days after the date specified in paragraph number 37.h. of this Decree, Defendant shall submit to HCDES a comprehensive written report on the results of the emissions tests, which shall be signed by the person or persons responsible for conducting and performing the test. Defendant may request additional time for the submittal of the written report, where warranted, with prior approval from HCDES.

V.E. Corrective Action

39. Defendant is enjoined and ordered to comply with the requirements of Ohio Adm. Code 3745-50-45(B).

40. Within thirty (30) days after entry of this Consent Decree, Defendant is enjoined and ordered to submit an application to obtain an Ohio Hazardous Waste Facility Installation and Operation permit to address site-wide corrective action at the Facility. Site-wide corrective action shall at a minimum incorporate the requirements of Ohio Adm. Code 3745-50-44(D) by identifying all waste management units and providing specific details about each unit located at the site and shall develop and include schedules for implementation of corrective action measures pursuant to Ohio Adm. Code 3745-55-011. Defendant shall identify waste management units requiring development and implementation of interim measures. These interim measures shall include measures to address:

MAY 18, 2001 DRAFT CONSENT ORDER

1) the coke oven gas release area located on the western portion of the site; 2) the trichloroethylene ("TCE") release area located in the northeast portion of the site; 3) the known benzene plume associated with former coal tar storage area located within the south plant; and 4) other areas or units within the Facility that are appropriately subject to interim measures under the Ohio Corrective Action Plan and other guidance listed in Appendix B. In addition, for purposes of developing and implementing site-wide corrective action, Defendant shall utilize the Ohio Corrective Action Plan, included as Appendix D to this Consent Decree and incorporated herein.

41. Any interim measures undertaken by Defendant in accordance with this Consent Decree or the Federal 7003 Order that were necessary to prevent further harm or contamination at the site, shall be designated as an interim measure for purposes of compliance with corrective action under this provision of the Consent Decree.

V.F. Additional Work

42. Ohio EPA or Defendant may determine that in addition to the tasks defined in the approved plans required by the 7003 Order and this Consent Decree, additional work may be necessary to accomplish the objectives of this Consent Decree. Within ten (10) days of receipt of written notice from Ohio EPA that additional work is necessary, Defendant shall submit a work plan and schedule to Ohio EPA Project Coordinator, as identified in Section IX, Submittal of Documents, for review and approval pursuant to Section IX, for the performance of the additional work. The work plan and schedule shall conform to the standards and requirements as described in this Consent Decree and in accordance with the guidance documents listed in Appendix B. Upon approval of the work plan by Ohio EPA, pursuant to Section IX, Review of Submittals, Defendant shall implement the work plan for additional work in accordance with the schedules contained therein.

MAY 18, 2001 DRAFT CONSENT ORDER

43. In the event that Defendant determines that additional work is necessary, Defendant shall submit a work plan for the performance of additional work. The work plan shall conform to the standards and requirements as described in this Consent Decree and in accordance with the guidance documents listed in Appendix B. Upon approval of the work plan by the Ohio EPA pursuant to Section IX, Review of Submittals, Defendant shall implement the work plan for additional work in accordance with the schedules contained therein.

VI. DESIGNATED SITE COORDINATORS

44. Within five (5) days of the effective date of this Consent Decree, Defendant shall notify Ohio EPA, in writing, of the name, address and telephone number of the designated Site Coordinator(s) and Alternate Site Coordinator(s). If a designated Site Coordinator(s) or Alternate Site Coordinator(s) is subsequently changed, the identity of the successor will provided to Ohio EPA at least five (5) days before the change occurs, unless impracticable, but in no event later than the actual day the change is made.

45. To the maximum extent practicable, except as specifically provided in this Consent Decree, communications between Defendant and Ohio EPA concerning the implementation of this Consent Decree shall be made between the Defendant's Site Coordinator and the Ohio EPA Project Coordinator. Defendant's Site Coordinator shall be available for communication with Ohio EPA regarding the implementation of these Consent Decree for the duration of this Consent Decree. Defendant's Site Coordinator shall be responsible for assuring that all communications from Ohio EPA are appropriately disseminated and processed. Defendant's Site Coordinator or alternate shall be present on the Site or on call during all hours of work at the Site.

46. Without limitation of any authority conferred on Ohio EPA by statute or regulation, the

MAY 18, 2001 DRAFT CONSENT ORDER

Ohio EPA Project Coordinator's authority includes, but is not limited to, the following:

- a) Taking samples and directing the type, quantity and location of samples to be taken by Defendant pursuant to an approved work plan;
- b) Observing, taking photographs, or otherwise recording information related to the implementation of these Consent Decree, including the use of any mechanical or photographic device;
- c) Directing that activities stop whenever the Project Coordinator for Ohio EPA determines that the activities at the Site may create or exacerbate a threat to public health or safety, or threaten to cause or contribute to air or water pollution or soil contamination;
- d) Conducting investigations and tests related to the implementation of this Consent Decree;
- e) Inspecting and copying records, operating logs, contracts and/or other documents related to the implementation of these Consent Decree ; and
- f) Assessing Defendant's compliance with this Consent Decree.

VII. SUPERVISING CONTRACTOR

47. All activities performed pursuant to this Consent Decree regarding the remediation or handling of hazardous wastes shall be under the direction and supervision of a contractor with expertise in hazardous waste site investigation and remediation who is qualified to perform such duties. Prior to the initiation of the activities, Defendant shall notify Ohio EPA in writing of the name of the supervising contractor and any subcontractor to be used in complying with the terms of this Consent Decree.

VIII. SUBMITTAL OF DOCUMENTS

48. All documents required to be submitted to U.S. EPA and/or Ohio EPA pursuant to this

MAY 18, 2001 DRAFT CONSENT ORDER

Consent Decree shall be submitted to the following addresses, or to such addresses as U.S. EPA and/or

Ohio EPA may hereafter designate in writing:

For U.S. EPA:

Chief, Enforcement and Compliance
Assurance Branch
Water Division (WCC-15J)
U.S. EPA, Region V
77 West Jackson Blvd.
Chicago, Illinois 60604

For Ohio EPA:

Ohio Environmental Protection Agency
Lazarus Government Center
Division of Surface Water
122 South Front Street
P.O. Box 1049
Columbus, Ohio 43216-1049
Attn: Manager, Water Resources Management Section;

Ohio Environmental Protection Agency
Lazarus Government Center
Division of Air Pollution Control
122 South Front Street
P.O. Box 1049
Columbus, Ohio 43216-1049
Attn: Tom Kalman or his successor;

Ohio EPA
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45102-2911
Attn: Mary Osika or her successor (for documents related to
the Division of Surface Water)

Ohio Environmental Protection Agency
Lazarus Government Center
Division of Hazardous Waste Management
122 South Front Street
P.O. Box 1049
Columbus, Ohio 43216-1049

AK5 043205

MAY 18, 2001 DRAFT CONSENT ORDER

Attn: Manager, Compliance Assurance Section; and

Ohio EPA
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45102-2911
Attn: RCRA Supervisor (for documents related to the Division of Hazardous
Waste Management).

For Hamilton County Department of Environmental Services
HCDES
250 William Howard Taft Bldg.
Cincinnati, Ohio 45219.
Attn: Harry Schwietering or his successor

All notices and correspondence under this Decree intended for the U. S. Department of Justice
and/or the State of Ohio shall be sent to the following addresses:

For U.S. Department of Justice
U.S. Department of Justice
Chief, Environmental Enforcement Section
Environment and Natural Resources Division
Post Office Box 7611
Washington, D.C. 20044-7611

For the State of Ohio
Chief, Environmental Enforcement Section
Ohio Attorney General's Office, 25th floor
30 East Broad Street, 25th Floor
Columbus, Ohio 43215-3428

IX. REVIEW OF SUBMITTALS

49. AK Steel shall obtain the approval of Ohio EPA prior to implementing any plan
submitted pursuant to this Consent Decree. U.S. EPA and Ohio EPA agree to review any plan, report,

MAY 18, 2001 DRAFT CONSENT ORDER

or other document that Defendant is required to submit under this Consent Decree and the 7003 Order which are submitted after the effective date of this Decree in accordance with this Consent Decree, the 7003 Order, appropriate state laws and rules and applicable guidelines. Upon review, U.S. EPA may provide comments to Ohio EPA and Ohio EPA may in writing approve, approve with special conditions, disapprove, require revisions to, or modify any document, plan or submission in whole or in part required under this Decree. If Ohio EPA requires revisions, Defendant shall submit a revised version of the submission within 30 days of receipt of Ohio EPA's notification of the required revisions. Ohio EPA may, at its sole discretion, unilaterally modify a submission upon Ohio EPA's first review or after Defendant has revised and resubmitted a document. Once approved, modified by Ohio EPA, or approved with modifications, all submissions due under this Decree shall be fully incorporated into and made an enforceable part of this Decree.

50. "Acceptable" shall mean that the quality of the submittals or completed work is sufficient to warrant Ohio EPA review in order to determine whether the submittal or work meets the terms and conditions of this order, including attachments and scopes of work. Acceptability of submittals or work, however, does not necessarily imply that they will be approvable. Approval by Ohio EPA of submittals or work, however, establishes that those submittals were prepared, or work was completed, in a manner acceptable to Ohio EPA.

51. Ohio EPA will provide Defendant with either written approval, conditional approval, approval with modification, rejection as not acceptable, disapproval with comments and/or modifications, or notice of intent to draft and approve, for any work plan, report (except progress reports), specification or schedule submitted pursuant to or required by this Decree. Defendant shall implement the approved plan or other document in accordance with specifications and schedule

MAY 18, 2001 DRAFT CONSENT ORDER

contained within the approved plan or other document.

52. Ohio EPA may reject and not comment on any submittal which Ohio EPA determines is not acceptable. Submittal of a document not acceptable is a violation of this Decree, unless such document is resubmitted prior to the due date for such submittal, and Ohio EPA determines that submittal is acceptable.

53. In the event that Ohio EPA initially disapproves a submission, or directs Defendant to modify the submission, in whole or in part, and notifies Defendant of the same, Defendant shall within fourteen (14) days, or such longer period of time as specified by Ohio EPA in writing, correct the deficiencies or make the modifications, and resubmit to Ohio EPA for approval a revised submission. By agreement of Ohio EPA and Defendant representatives, Defendant may only resubmit such portions pertaining to the notice of deficiency or modification. The revised submission shall incorporate all of the changes, additions, and/or deletions specified by Ohio EPA in the notice(s) of deficiency or modification. Any work done by Defendant prior to Ohio EPA's approval of a submission of a corresponding deliverable is recognized and acknowledged by Defendant that it is subject to revision by Defendant based upon Ohio EPA's approval, conditional approval and/or modification with approval.

54. In the event that Ohio EPA disapproves a revised submission, in whole or in part, Ohio EPA may again require Defendant to correct the deficiencies and incorporate all changes, additions, and/or deletions within fourteen (14) days, or such period of time as specified by Ohio EPA in writing.

55. Defendant's and Ohio EPA's representatives may jointly agree to minor field changes to be made by Defendant to any plan, report, or other document approved by Ohio EPA. Defendant shall notify Ohio EPA's representative of the nature of and reasons for any desired modification by

MAY 18, 2001 DRAFT CONSENT ORDER

Defendant. Within five (5) days of agreement by Ohio EPA's and Defendant's representatives, Defendant's representative shall submit written notification describing the agreed minor field changes to Ohio EPA's representative for review and approval.

56. If Ohio EPA determines that any additional or revised guidance documents will affect any submittal required by this Consent Decree, Ohio EPA will notify the Defendant and Defendant shall modify such submittal.

X. DEFENDANT'S PROGRESS REPORTS

57. Unless otherwise directed by Ohio EPA, Defendant shall submit a written progress report to Ohio EPA by the tenth (10) day of every month. At a minimum, each progress report shall:

- a) Identify the Site and activities reported on;
- b) Describe the status of the activities and actions taken towards achieving compliance with this Consent Decree during the reporting period, including any dates of completion of work, and activities which are scheduled for the next month;
- c) Describe difficulties encountered during the reporting period and actions taken to rectify any deficiencies;
- d) Describe activities planned for the next month and the projected completion dates of such activities;
- e) Identify changes in key personnel;
- f) List target and actual completion dates for each element of activity, including project completion;
- g) Include all data generated during the reporting period, including submittal of all raw and validated data received during the reporting period; and
- h) Provide an explanation for any deviation from any applicable schedules.

VIII. ACCESS TO INFORMATION AND RECORDS RETENTION

MAY 18, 2001 DRAFT CONSENT ORDER

58. Defendant shall provide to U.S. EPA and/or Ohio EPA within seven (7) days of a written request, copies of all non-privileged documents and information within their possession or control, or that of their contractors or agents relating to events or conditions at the Site including, but not limited to, manifests, reports, correspondence, or other documents, photos or audiovisual information related to the activities contemplated under this Consent Decree. Additionally, within seven (7) days of a request by U.S. EPA and/or Ohio EPA, Defendant shall submit to U.S. EPA and/or Ohio EPA copies of the results of all sampling and/or tests or other data, including raw data and original laboratory reports, generated by or on behalf of Defendant with respect to the Site and /or implementation of this Consent Decree. Defendant shall submit to U.S. EPA and/or Ohio EPA any interpretive reports and written explanations concerning the raw data and original laboratory reports. Such interpretive reports and written explanations shall not be submitted in lieu of original laboratory reports and raw data. Should Defendant subsequently discover an error in any report or raw data, Defendant shall promptly notify U.S. EPA and/or Ohio EPA of such discovery and provide the correct information.

59. Unless Defendant shows that a document or other information submitted to U.S. EPA and/or Ohio EPA pursuant to this Consent Decree is confidential under the provisions of R.C. 3704.08(A), 6111.05(A) and/or Ohio Adm. Code 3745-50-30, U.S. EPA and/or Ohio EPA may release the document or other information to the public without prior notice to Defendant.

60. If Defendant asserts that certain documents or other information are privileged and/or confidential under federal and/or state law, Defendant shall provide U.S. EPA and/or Ohio EPA with the following:

- a) The title of the document or information;

MAY 18, 2001 DRAFT CONSENT ORDER

- b) The date of the document or information;
- c) The name and title of the author of the document or information;
- d) The name and title of each addressee and recipient;
- e) A general description of the contents of the document or information;
and,
- f) The privilege or basis of confidentiality being asserted by Defendant and the basis for the assertion.

61. No claim of confidentiality or privilege shall be made with respect to any data, including but not limited to, all sampling, analytical, monitoring, or laboratory reports.

62. Defendant shall preserve for the duration of this Consent Decree and for a minimum of ten (10) years after its termination, all documents and other information within its possession or control, or within the possession of its contractors or agents, which in any way relate to this Consent Decree, notwithstanding any document retention policies to the contrary. Defendant may preserve such documents by microfiche, or other electronic or photographic device. At the conclusion of this document retention period, Defendant shall notify U.S. EPA and/or Ohio EPA at least sixty (60) days prior to the destruction of these documents or other information; and upon request, shall deliver such documents and other information to U.S. EPA and/or Ohio EPA, unless such documents are privileged.

IX. SITE ACCESS

63. The United States and/or the State of Ohio, its agents and employees, shall have full access to the Site at any and all reasonable times to observe Defendant conducting the work required by this Consent Decree and as may be necessary for the implementation of this Consent Decree.

64. To the extent that the Site or any other property to which access is required for the

MAY 18, 2001 DRAFT CONSENT ORDER

implementation of this Consent Decree is owned or controlled by persons other than Defendant, Defendant shall use its best efforts to secure from such persons access for Defendant, U.S. EPA and/or Ohio EPA as necessary to effectuate this Consent Decree. Copies of all access agreements obtained by Defendant shall be submitted to U.S. EPA and Ohio EPA within ten (10) days of execution by Defendant. If any access required to effectuate this Consent Decree is not obtained within thirty (30) days of the entry date of this Consent Decree, or within thirty (30) days of the date that U.S. EPA and/or Ohio EPA notifies Defendant in writing that additional access beyond that previously secured is necessary, Defendant shall promptly notify Ohio EPA in writing of the steps Defendant has taken to obtain access. U.S. EPA and/or Ohio EPA may, as deemed appropriate, assist Defendant in obtaining access.

65. Nothing in this Consent Decree shall be construed to limit the United States regulatory authority and/or the State of Ohio's statutory or permit authority under R.C. Chapters 3767, 6111, 3704 and 3734 or the rules adopted thereunder, CWA 33 USC § 1311 *et seq.* or CAA 42 U.S.C. § 7401 *et seq.* to obtain or seek access, conduct inspections or surveys and/or take samples or perform other activities authorized by those sections.

XIII. OVERSIGHT CONTRACTOR COSTS AND REMIBURSEMENT OF COSTS

66. Within ten (10) days of entry of this Consent Decree, Defendant shall pay to Ohio EPA XXXX dollars (\$XX). This payment shall be made by cashier's or certified check, payable to the order of the "Treasurer, State of Ohio," delivered to the Ohio Environmental Protection Agency, Fiscal Office, Division of Emergency and Remedial Response, P.O. Box 1049, 122 S. Front St., Columbus, Ohio 43216-1049, ATTN: Donna Waggener (or successor). Ohio EPA shall use this money to pay

MAY 18, 2001 DRAFT CONSENT ORDER

contractor(s) which Ohio EPA may hire to monitor the activities performed pursuant to this Consent Decree, including corrective action, from the date of its entry through its completion. If funds remain from the XXX dollars at the completion of the activities contemplated by this Consent Decree, such money shall be returned to Defendant.

67. If the XXX dollars is depleted before the completion of compliance with this Consent Decree, Defendant shall pay Ohio EPA, within thirty (30) days of the billing date, for all additional oversight costs incurred by the contractor(s) which may be hired by Ohio EPA.

68. Ohio EPA's Division of Emergency and Remedial Response ("DERR") has incurred and continues to incur Response Costs in connection with the Site. These include costs incurred related to monitoring the coke oven gas release remediation. Defendant shall reimburse DERR for all Response Costs incurred both prior to and after the effective date of this Consent Decree.

69. Within thirty (30) days of receipt of an accounting of Response Costs incurred prior to the effective date of this Consent Decree, Defendant shall remit a check to DERR for the full amount claimed.

70. With respect to Response Costs incurred after the effective date of this Consent Decree, Ohio EPA will submit to Defendant an itemized statement of DERR's Response Costs for the previous year. Within thirty (30) days of receipt of such itemized statement, Defendant shall remit payment for all of Ohio EPA's Response Costs for the previous year.

71. Defendant shall remit payments to Ohio EPA pursuant to this Section as follows:

- a) Payment shall be made by certified check payable to "Treasurer, State of Ohio" and shall be forwarded to Fiscal Officer, Ohio EPA, P.O. Box 1049, 122 South Front Street, Columbus, Ohio 43216-0149, ATTN: Mary Napier.
- b) A copy of the transmittal letter and check shall be sent to the Fiscal Officer, DERR, Ohio EPA, P.O. Box 1049, 122 South Front Street, Columbus, Ohio 43216-0149,

MAY 18, 2001 DRAFT CONSENT ORDER

ATTN: Patricia Campbell, and to the Site Coordinator.

XIV. CIVIL PENALTY

72. Defendant is enjoined and ordered pursuant to R.C. Section 6111.09, to pay to the State a civil penalty of _____ Dollars (\$_____). The penalty shall be paid by delivering a cashier's or certified check for that amount, payable to the order of "Treasurer, State of Ohio" within thirty (30) days of the Court's entry of this Consent Decree to Jena R. Suhadolnik, Administrative Assistant, or her successor, Ohio Attorney General's Office, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3428.

73. Defendant is enjoined and ordered pursuant to R. C. 3704.06, to pay to the State civil penalty of _____ Dollars (\$_____). Of this amount, \$ _____ shall be paid in cash by delivering, within thirty (30) day of entry of this Order, a certified check made payable to the order of "Treasurer, State of Ohio." This certified check shall be delivered to Jena Suhadolnik or her successor, Administrative Assistant, Office of the Attorney General of Ohio, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3428. The remaining \$ _____ shall be paid in cash in the form of a supplemental environmental project. Specifically, Defendant is hereby ordered to deliver a certified check in the amount of \$ _____ made payable to the Ohio Department of Natural Resources, Division of Forestry (Fund No. 509), for the purpose of funding urban area tree-planting projects in Ohio, and which shall be due within thirty (30) days of entry of this Consent Decree. This certified check shall also be delivered to Jena Suhadolnik in the manner specified above.

74. Defendant is ordered and enjoined, pursuant to R.C. Section 3734.13, to pay to the State of Ohio a civil penalty in the amount of _____ Dollars (\$_____). The penalty shall be

MAY 18, 2001 DRAFT CONSENT ORDER

paid by delivering a cashier's or certified check for that amount, payable to the order of "Treasurer, State of Ohio" within thirty (30) days of the Court's entry of this Consent Decree to Jena R. Suhadolnik, Administrative Assistant, or her successor, Attorney General's Office, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3428. This civil penalty shall be deposited into the hazardous waste clean-up fund created by R.C. 3734.28.

XV. STIPULATED PENALTIES

75. In the event that Defendant fails to comply with any requirement or deadline contained in paragraphs six, eight through twelve and seventeen through thirty-five inclusive of this Consent Decree or any requirement or deadline contained in any document approved in accordance with this Consent Decree, Defendant is liable for and shall pay stipulated penalties in accordance with the following schedule for each failure to comply:

- a) For each day of each failure to comply with each requirement or deadline of the paragraphs referenced above, up to and including thirty (30) days--Five Hundred Dollars (\$500.00) per day for each requirement or deadline not met.
- b) For each day of each failure to comply with each requirement or deadline of the paragraphs referenced above, from thirty-one (31) to sixty (60) days--One Thousand Dollars (\$1,000.00) per day for each requirement or deadline not met.
- c) For each day of each failure to comply with each requirement or deadline of the paragraphs referenced above, over sixty (60) days--Two Thousand Dollars (\$2,000.00) per day for each requirement or deadline not met.

76. Any payment required to be made under the preceding paragraph of this Section of the Consent Decree shall be made by delivering a cashier's or certified check or checks, for the appropriate amount within thirty (30) days from the date of the failure to meet the requirement or deadline of this Consent Decree, made payable to the order of "Treasurer, State of Ohio," to Jena R. Suhadolnik, Administrative Assistant, or her successor, Attorney General's Office, Environmental

MAY 18, 2001 DRAFT CONSENT ORDER

Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3428. The payment of the stipulated penalty shall be accompanied by a letter briefly describing the type of violation, deadline or requirement not met and the date upon which the violation of this Consent Decree occurred. This penalty shall be deposited as required under R.C. 6111.09.

77. In the event that Defendant fails to comply with any requirement or deadline contained in paragraphs thirty-eight through forty of this Consent Decree or any requirement or deadline contained in any document related to those paragraphs approved in accordance with this Consent Decree, Defendant is liable for and shall pay stipulated penalties in accordance with the following schedule for each failure to comply:

- a) For each day of each failure to comply with each requirement or deadline of the paragraphs referenced above, up to and including thirty (30) days--Five Hundred Dollars (\$500.00) per day for each requirement or deadline not met.
- b) For each day of each failure to comply with each requirement or deadline of the paragraphs referenced above, from thirty-one (31) to sixty (60) days--One Thousand Dollars (\$1,000.00) per day for each requirement or deadline not met.
- c) For each day of each failure to comply with each requirement or deadline of the paragraphs referenced above, over sixty (60) days--Two Thousand Dollars (\$2,000.00) per day for each requirement or deadline not met.

78. Any payment required to be made under the preceding paragraph of this Section of the Consent Decree shall be made by delivering a cashier's or certified check or checks, for the appropriate amount within thirty (30) days from the date of the failure to meet the requirement or deadline of this Consent Decree, made payable to the order of "Treasurer, State of Ohio," to Jena R. Suhadolnik, Administrative Assistant, or her successor, Attorney General's Office, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3428. The payment of

MAY 18, 2001 DRAFT CONSENT ORDER

the stipulated penalty shall be accompanied by a letter briefly describing the type of violation, deadline or requirement not met and the date upon which the violation of this Consent Decree occurred. This penalty shall be deposited into the hazardous waste clean-up fund created by R.C. 3734.28.

79. Except as otherwise provided in paragraph 80 of this Decree, in the event that the Defendant fails to comply with any of the requirements imposed by paragraphs fourteen, fifteen, thirty-six and/or thirty-seven of this Consent Decree, including any milestone date therein, the Defendant shall, immediately and automatically, be liable for and shall pay a stipulated penalty according to the following payment schedule:

- a) For each day of failure to meet a requirement, up to thirty (30) days -- Two Thousand Five Hundred Dollars (\$2,500.00) per day for each requirement not met;
- b) For each day of failure to meet a requirement, from thirty-one (31) to sixty (60) days -- Five Thousand Dollars (\$5,000.00) per day for each requirement not met;
- c) For each day of failure to meet a requirement, from sixty-one (61) to ninety (90) days -- Seven Thousand Five Hundred Dollars (\$7,500.00) per day for each requirement not met; and
- d) For each day of failure to meet a requirement, over ninety (90) days -- Ten Thousand Dollars (\$10,000.00) per day for each requirement not met.

80. In the event that the Defendant violates the requirements set forth in paragraph thirteen of this Consent Decree relating to the installation, modification and/or operation of air contaminant sources without the necessary permits or relating to the requirements for each air contaminant source contained within each respective source's applicable permit, the Defendant shall be liable for and shall immediately pay stipulated penalties in accordance with the following schedule:

- a) for each air contaminant source installed or modified without first obtaining a permit to install, Defendant shall pay a stipulated penalty of Ten Thousand Dollars (\$10,000.00) per source per installation/modification;

MAY 18, 2001 DRAFT CONSENT ORDER

- b) for each day for which each air contaminant source is operated without first obtaining a permit to operate or Title V permit, as applicable, Defendant shall pay a stipulated penalty of Two Thousand Five Hundred Dollars (\$2,500.00) per day of operation per source;
- c) for each day for which each air contaminant source does not comply with the requirements contained in its respective permit, One Thousand Dollars (\$1,000.00) per day per source.

81. Any payment required to be made under the preceding paragraph of this Section of the Consent Decree shall be made by delivering a cashier's or certified check or checks, for the appropriate amount within thirty (30) days from the date of the failure to meet the requirement or deadline of this Consent Decree, made payable to the order of "Treasurer, State of Ohio," to Jena R. Suhadolnik, Administrative Assistant, or her successor, Attorney General's Office, Environmental Enforcement Section, 30 East Broad Street, 25th Floor, Columbus, Ohio 43215-3428. The payment of the stipulated penalty shall be accompanied by a letter briefly describing the type of violation, deadline or requirement not met and the date upon which the violation of this Consent Decree occurred. This penalty shall be deposited as required under R.C. 3704.06.

82. The imposition, payment and collection of stipulated penalties pursuant to violations of this Consent Decree shall not prevent the State from pursuing additional remedies, civil, criminal or administrative, for violations of applicable laws.

83. The payment of stipulated penalties by Defendant and the acceptance of such stipulated penalties by Plaintiff-Intervenor pursuant to this Section shall not be construed to limit Plaintiff-Intervenor's authority to seek additional relief pursuant to R.C. Chapters 3704, 3734 or 6111, including civil penalties under R.C. 3704.06, 3734.13 and 6111.09, or to otherwise seek judicial enforcement of this Consent Decree, for the same violation for which a stipulated penalty was paid or

MAY 18, 2001 DRAFT CONSENT ORDER

for other violations.

XVI. COMPLIANCE WITH APPLICABLE LAWS, PERMITS AND APPROVALS

84. All activities undertaken by Defendant pursuant to this Consent Decree shall be undertaken in accordance with the requirements of all applicable federal, state and local laws, rules, regulations and permits or other. Defendant shall submit timely applications and requests for any such permits and approvals. Where such laws appear to conflict with the other requirements of this Consent Decree, Defendant is ordered and enjoined to immediately notify U.S. EPA and/or Ohio EPA of the potential conflict. Defendant is ordered and enjoined to include in all contracts or subcontracts entered into for work required under this Consent Decree, provisions stating that such contractors or subcontractors, including its agents and employees, shall perform all activities required by such contracts or subcontracts in compliance with all applicable laws and rules. This Consent Decree is not a permit issued pursuant to any federal, state or local law or rule.

XVII. APPENDICES

85. All appendices to this Consent Decree are incorporated by reference as if fully restated herein and are an enforceable part of this Consent Decree. The following appendices are attached to this Consent Decree at the time of signing by the Parties on the effective date:

- a) "Appendix A" is the map of the Site;
- b) "Appendix B" is the list of U.S. EPA and Ohio EPA guidance documents;
- c) "Appendix C" is the Administrative Order Pursuant to Section 7003 of RCRA;
and
- d) "Appendix D" is the Ohio Corrective Action Plan.

XVIII. RETENTION OF JURISDICTION

86. This Court shall retain jurisdiction of this action for the purpose of enforcing and administering this Consent Decree.

XIX. COSTS

87. Defendant is hereby ordered to pay the court costs of this action.

88. Should Defendant subsequently be determined by the Court to have violated the terms and conditions of this Consent Decree, then Defendant shall be liable to the United States and/or the State of Ohio for any reasonable costs and reasonable attorneys' fees incurred by the United States and/or the State of Ohio in such actions against Defendant for non-compliance with this Consent Decree.

XX. ENTRY OF CONSENT ORDER AND JUDGMENT BY CLERK

89. The parties agree and acknowledge that final approval by the Plaintiff, Plaintiff-Intervenor and Defendant, and entry of this Consent Decree is subject to the requirements of 40 C.F.R. 123(d)(1)(iii), which provides for notice of the lodging of the Consent Decree, opportunity for public comment, and the consideration of any public comments. The United States, the State of Ohio and the Defendant reserve the right to withdraw this Consent Decree based on comments received during the public comment period.

90. Upon signing of this Consent Decree by the Court, the clerk is directed to enter it upon

MAY 18, 2001 DRAFT CONSENT ORDER

the journal. Within three (3) days of entering the judgment upon the journal, the clerk is directed to serve upon all parties notice of the judgment and its date of entry upon the journal in the manner prescribed by Rule 5(B) of the Federal Rules of Civil Procedure and note the service in the appearance docket.

XXI. AUTHORITY TO ENTER INTO THE CONSENT ORDER

91. Each signatory for a corporation represents and warrants that he/she has been duly authorized to sign this document and so bind the corporation to all terms and conditions thereof, and that he/she submits with this Consent Decree an authenticated and certified resolution from the corporation establishing that he/she is so empowered.

The parties enter into this Consent Decree and submit it to the court that it may be approved and entered. THE UNDERSIGNED Parties enter into this Consent Decree, subject to the public notice requirements of 28 C.F.R. 50.7, and submit it to the Court for entry.

FOR THE UNITED STATES OF AMERICA:

DATED: _____

First Assistant Attorney General

Environmental and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

AK5 043221

MAY 18, 2001 DRAFT CONSENT ORDER

DATED: _____

Robert W. Darnell (trial attorney)
Attorney
Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044

United States Attorney

DATED: _____

Gerald K. Kaminski
Assistant United States Attorney
Southern District of Ohio
Potter Stewart Federal Courthouse, Room 220
Fifth and Walnut Streets
Cincinnati, Ohio 45202

DATED: _____

Assistant Administrator for Enforcement
and Compliance Assurance
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

MAY 18, 2001 DRAFT CONSENT ORDER

David A. Ullrich
Regional Administrator
U.S. Environmental Protection Agency
Region V, (R-19J)
77 West Jackson Boulevard
Chicago, IL 60604-3590

DATED: _____

**FOR THE STATE OF OHIO,
BETTY D. MONTGOMERY,
ATTORNEY GENERAL OF OHIO**

David G. Cox (0042724) (trial attorney)
Lori A. Massey (0047226)
Douglas A. Curran (0065750)
David G. Kern (0072421)
Assistant Attorneys General
Environmental Enforcement Section
30 East Broad Street, 25th Floor
Columbus, Ohio 43215-3428

DATED: _____

FOR AK STEEL CORPORTATION

Authorized representative of Defendant
AK Steel Corporation

DATED: _____

Paul W. Casper, Jr. (0010412) (trial attorney)
Stephen N. Haughey (0010459)
FROST, BROWN & TODD LLP
201 East Fifth Street, Suite 2500
Cincinnati, Ohio 45202-4182

DATED: _____

AK5 043223

MAY 18, 2001 DRAFT CONSENT ORDER

Consent Decree entered this _____ day of _____, 2001.

**JUDGE HERMAN J. WEBER
UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO**

AK5 043224

CEPA Hydro
Comments

DRAFT

INTER-OFFICE COMMUNICATION

TO: Lori Massey, AAG, OAG
Gary Cygan, RPM, U.S. EPA

FROM: Harold O'Connell, DHWM/SWDO

SUBJECT: Soil & Groundwater Investigation Plan Comments
AK Steel Corporation/Middletown

DATE: April 20, 2001

Provided for your consideration are those comments derived from our review of the March 2001 Soil and Groundwater Investigation Plan:

COMMENT #1

Section 1.1 Site Description:

All of the discussion in 1.1 Site Description and 1.2 Investigation Objectives uses the phrases "OMS operations area" or "OMS area" and 1.1 describes the OMS area as "The OMS operations are located south of Oxford State Road and east of Yankee Road, immediately east and northeast of Monroe Ditch and south of Dick's Creek." This site description excludes the two landfills of concern that are located west and northwest of the Monroe Ditch. The OMS area is the only area mentioned in the Site Description on page 1. 1.2 Investigation Objectives, 1st paragraph, refers to the 7003 Order Paragraphs 143 through 150 (Soil Investigation and Hydrogeologic Investigation). Paragraph 143 in the 7003 Order requires that AK Steel "submit for review and approval a work plan...to identify, remove and properly dispose of all remnant sources of PCBs in soil from locations at the AK Steel facility which may contribute to releases of PCBs to Dick's Creek, the landfill tributary, or pose an unacceptable risk to human health and the environment." Paragraph 146 of the 7003 order relates to the Hydrogeologic Investigation, and uses the phrase "in the vicinity of the slag processing area." The site description needs to include at least the landfills west and south of the landfill

AK5 038494

14 days
turnover

A930

tributary, and any other area that is covered by paragraphs 143 and 146 of the 7003 order.

COMMENT #2

Section 2.1.2 AK Steel Waste Management Activities:

2nd paragraph describes the use of the Former Oil Separator Ponds and Former Ponds West of Monroe Ditch. The statement is made that it is thought that wastewater from several processes were transferred to these ponds to allow the oils waste and wastewater to separate. The last sentence states that the water in these ponds were allowed to overflow and the oils were reclaimed periodically. However, oil would float on water, and the first thing to overflow would be the oil, not the water. The discussion should be revised.

COMMENT #3

3rd paragraph states that in 1980 sampling was conducted on the wastewater and sediments in both sets of ponds mentioned above and that the larger separator ponds contained PCBs but the smaller separator ponds and those located west of the Monroe Ditch did not contain PCBs. The final sentence of the paragraph states that these analytical results are not available, which means that none of this information can be verified, and is therefore not useful in PCB delineation for this site investigation.

COMMENT #4

4th paragraph describes the methods used to close the Former Oil Separator Ponds and the Former Ponds West of Monroe Ditch. The last sentence of this paragraph states that the PCB containing waste materials were "managed in accordance with... TSCA requirements." The TSCA requirements are not clarified further. To our knowledge there are no records available to substantiate this assertion.

COMMENT #5

5th paragraph states that AK Steel reports that they have no reason to believe that there are PCB-containing wastes in the solid waste landfill southwest (1 of 2 Former Ponds West of referenced above) of the Monroe Ditch. Once

again, there are no records available and these statements have not been verified by any chemical analysis results.

COMMENT #6

6th paragraph describes what "appears" to have occurred in the area of the solid waste landfill north of Monroe Ditch and that AK Steel reports that no PCB-containing wastes were placed in this landfill. There is no documentation to support this assertion.

COMMENT #7

Section 2.8.1 PCBs

In this section more information is necessary to conclude whether the groundwater sample PCB levels were impacted by turbidity, pH, and sample collection and/or chemical analyses methods. No record of turbidity measurements are included in this report, no pH measurements for sampling in 1997-1999 are found in any tables are included in this report, no mention of whether the samples were filtered or unfiltered and if filtered, if the filtrate was analyzed for PCBs. There is nothing in this report that can be found to substantiate the statement that "concentrations in the grab groundwater samples are likely falsely high." In the final sentence of this section it is stated that PCBs were detected in samples collected in June-July 1998 and no PCBs were detected in August 2000, but there is no mention of methods used for sample collection and/or sample analysis. This information is critical to PCB level detection in groundwater samples. Additionally, pH measurements, etc. taken during the August 2000 sampling event cannot be used as representative measurements for the 1997 - 1999 sampling events.

COMMENT #8

Section 2.8.2 pH

2nd paragraph states that pH is referenced in Table 8 and it is not indicated. Additionally, Table 8 asterisk (*) used to indicate a reference is not indicated in any key on that Table.

COMMENT #9

SOPs (Appendix G)

AK SGIP-OEPA REVIEW COMMENTS

April 20, 2001

page 10

SOP-4

Monitoring Well Development

Procedure 9-A. Bailer Method & Procedure 9B Pump Method

Page 6/29 & 7/29

Turbidity meters were not included as equipment needed. However, the procedures indicated that turbidity data would be obtained. Failure to include the meter in the equipment list is an assumed oversight. If this is not the case, AK should provide clarification

COMMENT #10

SOP-10

Step 5 in Procedure 9-A Bailer Method should be applied to all ground water sampling. SOP-10 Sample Filtration for Metals Analysis references SOP-13 steps 1-11 for sample collection although the SOP-10 is used for aqueous sampling and SOP-13 is used for soils sampling. This should be corrected.

COMMENT #11

SOP-18

Completion of Boring Logs

Page 25/29

All boring logs should contain a surveyed surface elevation referenced to mean sea level. A step which reflects this should be added to SOP-18. Furthermore, turbidity, pH, etc. measures should be included in Step 12.

COMMENT #12

Section 3.4.2

Vertical Gradients

Page 30

Appendix D, Figure 7 was not included in the workplan.

COMMENT #13

Vertical Gradients

Page 31

The last sentence of the last paragraph states that " Available groundwater quality data from 2000 indicate that upper aquifer ground water does not

AK5 038498

contain PCB's". Although the ground water data in the monitoring wells may support this statement, the seep data from seep # 10 do not (PCB's have been detected in samples from this seep according to information provided by OEPA - DSW). Assuming that seep # 10 is a surface expression of upper aquifer ground water in this area as implied on cross sections, AK Steel should investigate further the PCB detections in this seep and determine: 1) if the OMS area is the source area, and 2) the extent of PCB impact. Additional investigations in this area would likely necessitate gaining site access from the Miami Conservancy District.

COMMENT #14

Section 4: Rationale and Technical Approach for Additional Investigation

Need to clarify that the OMS area discussed here also includes the two landfills west and northwest of Monroe Ditch to aid in identifying sources of PCBs in soils and "assess groundwater quality and groundwater flow to refine the groundwater flow model and evaluate the risks to ..human healthand the environment."

COMMENT #15

Rationale and Technical Approach for Additional Investigation

Page 32

Seep investigation is not included in this section. At a minimum, a description of the investigations occur in the event of a PCB detection from a seep should be addressed in this section.

COMMENT #16

4.1 Baseline Groundwater Sampling Event

In the 1st paragraph, the baseline subtasks are listed but turbidity measurement is not listed. The turbidity measurement is necessary to describe and characterize groundwater samples. Also, a SOP for this measurement must be included in the Appendix G.

COMMENT #17

The 3rd paragraph discusses chemical analysis of the samples collected

stating an unfiltered sample will be analyzed initially and if the results are positive for PCBs or metals, a filtered sample will then be analyzed. Will this filtered sample be collected at the same sampling event as the unfiltered sample? Also, the turn around time for the 1st sample (unfiltered) and 2nd sample (filtered) is critical in following the SOPs for sample holding times. Metals are generally not an issue if extracted and preserved properly but PCB and PAH (PAHs are one of the groups of chemicals of concern but analysis of these are not mentioned in this paragraph) is more sensitive and extraction, hold time and analytical methods are critical to obtaining valid data. (Once again, sampling, filtering and extraction methods as well as analytical methods must all be included in this work plan. Severn Trent Laboratories should have included methods for chemical analysis in their report of previous sampling events and Aracadis should include them (the laboratory SOPs) in Appendix G of this work plan.

COMMENT #18

4.3 Survey of Damaged Wells

The 1st paragraph states that if damaged wells are deemed repairable, the damaged casing will be removed and the riser pipe cut-off below the kink. Please provide details on how this will be accomplished without danger of surface water run-off flooding and cross contamination. Also, please provide a specific rationale regarding when and how well the need for replacement of damaged wells will be determined.

COMMENT #19

4.4 Completion of Soil Borings and Collection/Analysis of Soil Samples

The 2nd bullet last sentence states that soils sampling is not proposed for the MDS02P drilling due to the proximity of MDS03S. It appears that MDS01S would be closer in proximity to MDS02S and should be used for comparison purposes.

COMMENT #20

The 5th bullet states that the larger Former Oil Separator Ponds will be sampled through (in) each of the ponds, but it doesn't state exactly where (center, corner, etc.) Nor does it state the rationale for a sampling plan in this

area. Please clarify why the smaller ponds are not being sampled and why the western most pond and area MDS32S is specifically designated for monitoring well installation.


COMMENT #21

Page 36, last paragraph, the PID will not detect the presence of the contaminants of concern. Please provide rationale and methods for chemical analysis if any oil is detected or PID readings measure and which chemicals will be analyzed. Additionally, we suggest using commonly utilized field screening methods such as PCB hot kits and immunoassay tests to help determine presence of chemicals of concern that the PID will not detect.

COMMENT #22

Page 37, the 1st paragraph states that soil samples will be analyzed for PAHs and/or metals only if these chemicals are detected in the groundwater. These analyses should not be dependent on the presence of these parameters in groundwater samples. There is less chance of these chemicals existing in the groundwater than in the soils, as soils can act as a sink for the chemicals of concern and, depending on later conditions, release those chemicals to groundwater. Levels of chemicals of concern in groundwater should not determine soil sampling plans.

COMMENT #23

 Page 37, 2nd paragraph states that samples will be analyzed for PAHs or metals only if they are found in adjacent boring locations during the Baseline Groundwater Sampling Event. This rationale is even less relevant to representative sampling than basing the soils sampling plan on the results of the groundwater samples collected from boring locations. (See comment # 17 above) Soil samples should be analyzed for all parameters (PCBs, PAHs and metals) regardless of groundwater concentrations.

COMMENT #24

4.5 Installation and Sampling of Additional Groundwater Monitoring Wells

Page 38, the 4th bullet on that page, the statement that "the screened intervals

AK SGIP-OEPA REVIEW COMMENTS

April 20, 2001

page 14

of these perched wells will be installed at the interface of the waste and native clay surface" is confusing. Is the solid waste landfill (slag?) the perched area? If so, PCBs, PAHs and metals could be in the waste or in the closed ponds underneath the waste. These wells should be installed such that they monitor potential releases from these features and that may require installation in the shallow aquifer. The landfill waste should be sampled during the boring and analyzed for the same parameters as the soil samples.

COMMENT #25

Page 39, final sentence of final paragraph for this section - reference comment # 17.

COMMENT #26

Section 4.8

Soil and Groundwater Investigation Report

Page 41

AK should ensure that all soil boring logs contain a surveyed surface elevation referenced to mean sea level

COMMENT #27

Remove previous comments and replies from report.

-end of comments-

cc: Mark Allen/Nita Nordstrom, DERR/SWDO
John McGinnis, DDAGW/SWDO

AK5 038502



Tetra Tech EM Inc.

200 E. Randolph Drive, Suite 4700 ♦ Chicago, IL 60601 ♦ (312) 856-8700 ♦ FAX (312) 938-0118

April 18, 2001

Mr. Allen Wojtas
Work Assignment Manager
U.S. Environmental Protection Agency Region 5
Enforcement and Compliance Assurance Branch (DE-9J)
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Technical Document Review
 Work Assignment Cost Estimate for
 Amended Technical Direction Memorandum
 Dated March 22, 2001
 AK Steel, Middletown, Ohio
 EPA Contact No. 68-W9-9018, Work Assignment No. R05805-24**

Dear Mr. Wojtas:

Tetra Tech EM Inc. (Tetra Tech) is submitting its work assignment (WA) cost estimate for the above-referenced amended technical direction memorandum (TDM). Tetra Tech is also submitting one copy of the cost estimate directly to Mr. Gary Cygan and Mr. Michael Mikulka, the U.S. Environmental Protection Agency (EPA) technical contact/project manager and technical advisor for this facility, respectively. The technical approach and all other elements of the approved work plan for WA No. R05805 and subsequent amendments are incorporated into the cost estimate by reference.

The cost estimate has been prepared in accordance with the requirements of the TDM and discussions with EPA. The current TDM amends the TDM dated November 21, 2000 which in turn amended the TDM dated June 5, 2000 for this same facility and WA (the original TDM). The November 21, 2000, TDM revised the specific amendments of the original TDM regarding the number and types of sampling and remedial plans that EPA would like Tetra Tech to assist in reviewing. Specifically, the November 21, 2000, amended TDM formally added the hydrogeological investigation plan, the water use alternatives plan, and the soil investigation plan to the list of proposed plans that Tetra Tech may be requested to review. The November 21, 2000, TDM also clarified the number and basis of the remedial plans that Tetra Tech may be requested to review.

The March 22, 2001, TDM requests that Tetra Tech review the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" (the risk assessment work plan). It should be noted that Tetra Tech received your verbal approval to begin reviewing the risk assessment work plan in February 2001. Tetra Tech submitted technical review comments on the risk assessment work plan to EPA on February 28, 2001. Currently, at EPA's direction Tetra Tech is revising the comments to incorporate additional

AK5 043613



contains recycled fiber and is recyclable

Mr. Allen Wojtas
April 18, 2001
Page 2

comments received on the risk assessment work plan from the Ohio Environmental Protection Agency (OEPA). Tetra Tech has participated in several conferences calls with EPA and OEPA staff to discuss agency-specific comments on the risk assessment work plan. Tetra Tech will submit the revised comments regarding the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" during the week of April 9, 2001.

The total budget for completing the work required under the amended TDM is 83 LOE hours and \$6,117. The currently approved budget is 2,107.5 LOE and \$126,994. The revised total work assignment budget is 2,190.5 LOE and \$133,111. The cost estimate is business confidential.

Please contact me at (312) 856-8786 or Eric Morton at (312) 856-8797 if you have any questions about the cost estimate or need additional information.

Sincerely,



Mary Wojciechowski
Project Manager

Enclosure

cc: Bernie Orenstein, EPA Regional Project Officer (letter only)
✓ Gary Cygan, EPA Technical Contact and Project Manager
Michael Mikulka, EPA Technical Advisor
Ed Schuessler, Tetra Tech Regional Manager (letter only)
Art Glazer, Tetra Tech Program Manager
Eric Morton, Tetra Tech Site Manager

AK5 043614

ENCLOSURE

**WORK ASSIGNMENT COST ESTIMATE
FOR AMENDED TECHNICAL DIRECTION MEMORANDUM
DATED MARCH 22, 2000
WORK ASSIGNMENT NO. R05805-24**

(Five Sheets)

Contract No. 68-W9-9018
Work Assignment No. R05805-24

Amended TDM Dated March 22, 2001
April 18, 2001

AK5 043615

**WORK ASSIGNMENT COST ESTIMATE
FOR AMENDED TECHNICAL DIRECTION MEMORANDUM
DATED MARCH 22, 2001
WORK ASSIGNMENT NO. R05805-24**

This work assignment (WA) cost estimate was prepared in response to an amended technical direction memorandum (TDM) issued by the U.S. Environmental Protection Agency (EPA) Region 5 on March 22, 2001. The amended TDM clarifies the scope of work for Task 3 of WA No. R05805. Specifically, the amended TDM expands the scope of the original TDM dated June 5, 2000, for this same facility and WA (the original TDM) as previously amended by the TDM dated November 21, 2000 regarding the number and type of sampling and remedial plans that EPA would like Tetra Tech to assist in reviewing. The amendment affects Subtask 3 of the approved cost estimate dated July 31, 2000, based on the original TDM. The amended TDM does not affect Subtasks 1, 2, and 4 of the approved cost estimate or the original TDM.

The cost estimate for the amended TDM dated March 22, 2001, includes two tables summarizing the cost to complete the additional work specified in the amended TDM. Cost estimate details for individual subtasks are available upon request. The following section provides subtask-specific assumptions used to prepare the cost estimate. The total cost of the work assignment including funds to complete the additional work specified in the amended TDM, are summarized in the cover letter to this cost estimate.

TASK 3 -- TECHNICAL REVIEW OF DOCUMENTS

The original TDM directs Tetra Tech to complete four subtasks under Task 3. These four subtasks are listed below:

- Review background documents provided by EPA or developed by Wright State University (WSU)
- Integrate WSU information into other environmental information and prepare (1) an ecological risk assessment (ERA) and a human health risk assessment (HHRA) based on the complete data set
- Review and comment on AK Steel's sampling and analysis plan (SAP) and quality

Contract No. 68-W9-9018
Work Assignment No. R05805-24

1

Amended TDM Dated March 22, 2001
April 18, 2001

AK5 043616

assurance project plan (QAPP)

- Review and comment on AK Steel's proposed remedial plan

Based on the TDM dated November 21, 2000, Subtasks 3 and 4 were revised to update the number, type, and basis for the various work and remedial plans to be reviewed by Tetra Tech. The amended TDM dated March 22, 2001, does not request any additional work with regard to Subtasks 1, 2, and 4. Therefore, these subtasks are not discussed further in this cost estimate.

For Task 3, Tetra Tech estimates that a total of 83 level-of-effort (LOE) hours and \$6,117 will be needed to complete the additional work requested under the amended TDM. The subtask-specific assumptions for the additional work requested under the amended TDM are presented below.

Subtask 3

The original TDM requested that Tetra Tech review two plans -- SAP and QAPP. The November 21, 2000, TDM revised the specific amendments of the original TDM regarding the number and types of sampling plans that EPA would like Tetra Tech to assist in reviewing, adding the hydrogeological investigation plan, the water use alternatives plan, and the soil investigation plan to the list of proposed plans that Tetra Tech may be requested to review. The November 21, 2000, TDM also clarified the number and basis of the remedial plans that Tetra Tech may be requested to review.

The March 22, 2001, TDM requests that Tetra Tech review the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" (the risk assessment work plan). It should be noted that Tetra Tech received verbal approval to begin reviewing the risk assessment work plan in February 2001 from the EPA work assignment manager (Mr. Allen Wojtas). Tetra Tech submitted technical review comments on the risk assessment work plan to EPA on February 28, 2001. Currently, at EPA's direction Tetra Tech is revising the comments to incorporate additional comments received on the risk assessment work plan from the Ohio Environmental Protection Agency (OEPA). Tetra Tech has participated in several conferences calls with EPA and OEPA staff to discuss agency-specific comments on the risk assessment work plan. Tetra Tech will submit the revised comments regarding the "Work Plan for

Human Health and Ecological Risk Assessment, Revision 1" during the week of April 9, 2001.

Tetra Tech estimates that its review of the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" will require 83 LOE. Tetra Tech's review will focus on whether (1) EPA's comments on the original draft work plan were adequately addressed and (2) the work plan is technically adequate and is complies with relevant EPA human and ecological risk assessment guidance. Tetra Tech also factored in resources to merge relevant OEPA comments on the work plan into the comments submitted by Tetra Tech on February 28, 2001, and submit a revised set of comments to EPA.

TRAVEL

No additional travel beyond that described in the approved cost estimate is required to complete the expanded scope presented in the amended TDM.

**Tetra Tech EM Inc.
Tasks Summary**

| Task Number | Task 1 | Task 2 | Task 3 | Task 4 | Task 5 | Task 6 | Task 7 | Task 8 | Task 9 | Task 10 | Task 11 | Task 12 | |
|---|--------|--------|---------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|
| Task Name | | | | | | | | | | | | | TOTAL |
| Tetra Tech Labor Estimate | | | | | | | | | | | | | |
| P4 | 0 | 0 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 65 |
| P3 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |
| P2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| T2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clerical | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Team Sub Labor Estimate | | | | | | | | | | | | | |
| Professional Hours | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clerical Hours | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Tetra Tech Professional Labor Cost | \$0 | \$0 | \$2,807 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$2,807 |
| Total Tetra Tech Clerical Labor Cost | \$0 | \$0 | \$27 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$27 |
| Total Tetra Tech Labor Cost | \$0 | \$0 | \$2,834 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$2,834 |
| Total Tetra Tech Travel Cost | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total Tetra Tech ODCs | \$0 | \$0 | \$211 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$211 |
| Team Sub Costs | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Non-Team Sub Cost | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Indirect Costs | \$0 | \$0 | \$2,676 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$2,676 |
| Subtotal Cost | \$0 | \$0 | \$5,721 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$5,721 |
| Fixed Fee | \$0 | \$0 | \$396 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$396 |
| TOTAL COST | \$0 | \$0 | \$6,117 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$6,117 |

Notes:

- 1 See attached sheets for detail on cost breakdown
- 2 Indirect costs include fringe benefit, overhead, and general administrative costs.

AK5 043619



TETRA TECH EM INC.
REPA ZONE III CONTRACT 68-W-99-008
WORK ASSIGNMENT SUMMARY

W.A. NO. : R05805
W.A. NAME : AK Steel Amended TDM

| LABOR CATEGORY | | Hours | Costs |
|----------------|----------------|-------|---------|
| P4 | | 65 | \$2,367 |
| P3 | | 18 | 440 |
| P2 | | 0 | 0 |
| P1 | | 0 | 0 |
| T2 | | 0 | 0 |
| Subcontractors | | 0 | |
| Total LOE | | 83 | |
| Clerical : | Tetra Tech | 2 | 27 |
| | Subcontractors | 0 | |
| TOTAL HOURS | | 85 | |

| | | |
|-------------------------|-----------|---------|
| Tetra Tech Direct Labor | | \$2,834 |
| Subcontractors | | 0 |
| Vendors | | 0 |
| Travel Costs : Air | | 0 |
| | Per Diem | 0 |
| | Hotel | 0 |
| | Ground | 0 |
| Total Travel Costs | | 0 |
| ODCs : Reproduction | | 23 |
| | Freight | 20 |
| | Computer | 118 |
| | Telephone | 50 |
| | Supplies | 0 |
| | Equipment | 0 |
| | All Other | 0 |
| Total ODCs | | 211 |
| Indirect Costs | | 2,676 |
| Total Cost | | 5,721 |
| Fixed Fee | | 396 |
| TOTAL COST & FEE | | \$6,117 |



Tetra Tech EM Inc. ♦ IES Engineering Services Division

200 E. Randolph Drive, Suite 4700 ♦ Chicago, IL 60601 ♦ (312) 856-8700 ♦ FAX (312) 938-0118

April 18, 2001

Mr. Allen Wojtas
Work Assignment Manager
U.S. Environmental Protection Agency Region 5
Enforcement and Compliance Assurance Branch (DE-9J)
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Technical Comments - Draft "Soil and Groundwater Investigation Plan (SGIP)",
Olympic Mills Service Operations Area - AK Steel Property, Middletown, Ohio
EPA Contract No. 68-W9-9018, Work Assignment No. R0580524**

Dear Mr. Wojtas:

In March 2001, AK Steel Corporation (AK Steel) submitted the above-referenced SGIP to the U.S. Environmental Protection Agency (EPA). The SGIP combines two previous draft workplans for (1) a soil investigation and (2) a hydrogeologic investigation at the Olympic Mills Service (OMS) area at the AK Steel property. The draft SGIP was prepared by ARCADIS-Geraghty and Miller (ARCADIS) on behalf of AK Steel and was revised to address deficiencies and comments submitted by EPA in January and February 2001 on the previous drafts (Revisions 1) of the individual work plans.

Tetra Tech EM Inc. (Tetra Tech) reviewed the draft SGIP for technical adequacy and to evaluate whether EPA's comments on previous revisions of the individual work plans were adequately addressed. Appendices A and B of the draft SGIP contain AK Steel/ARCADIS responses to EPA's comments on Revision 1 of the prior individual soil and hydrogeologic work plans, respectively. Tetra Tech reviewed these responses, as well as the draft SGIP. Tetra Tech's review identified issues and concerns, and instances where EPA comments were incompletely addressed. Tetra Tech's comments are enclosed.

If you have any questions regarding this submittal, please contact me at (312) 856-8786 or Tetra Tech's site manager, Eric Morton at (312) 856-8797.

Sincerely,

Mary Wojciechowski
Tetra Tech Project Manager

Enclosure

cc: Bernie Orenstein, EPA Regional Project Officer (letter only)
✓ Gary Cygan, EPA Technical Contact and Project Manager
✓ Michael Mikulka, EPA Technical Advisor
Ed Schuessler, Tetra Tech Regional Manager (letter only)
Eric Morton, Tetra Tech Site Manager
Rob Porges, Tetra Tech Cincinnati
Art Glazer, Tetra Tech Program Manager

AK5 043331

ENCLOSURE

TECHNICAL REVIEW COMMENTS

**DRAFT "SOIL AND GROUNDWATER INVESTIGATION PLAN (SGIP)",
OLYMPIC MILLS SERVICE OPERATIONS AREA - AK STEEL PROPERTY,
MIDDLETOWN, OHIO**

(Seven Pages)

AK5 043332

TECHNICAL REVIEW COMMENTS
DRAFT "SOIL AND GROUNDWATER INVESTIGATION PLAN (SGIP)",
OLYMPIC MILLS SERVICE OPERATIONS AREA - AK STEEL PROPERTY,
MIDDLETOWN, OHIO

Under Contract No. 68-W9-9018, Work Assignment No. R0580524, Tetra Tech EM Inc. (Tetra Tech) technically reviewed the draft "Soil and Groundwater Investigation Plan" (SGIP) for the Olympic Mills Service (OMS) Operations Area at the AK Steel Corporation (AK Steel) facility in Middletown, Ohio. The draft SGIP combines two previous draft work plans for (1) a soil investigation and (2) a hydrogeologic investigation at the OMS Operations Area at AK Steel. The draft SGIP was prepared by ARCADIS-Geraghty and Miller (ARCADIS) on behalf of AK Steel and was revised to address deficiencies and comments submitted by the U.S. Environmental Protection Agency (EPA) in January and February 2001 on the previous drafts (Revisions 1) of the above-mentioned individual work plans, respectively.

Tetra Tech reviewed the draft SGIP for technical adequacy and to evaluate whether EPA's comments on Revision 1 of the individual work plans were adequately addressed. Appendices A and B of the draft SGIP contain AK Steel/ARCADIS responses to EPA's comments on Revision 1 of the prior individual soil and hydrogeologic work plans, respectively. Tetra Tech reviewed these responses, as well as the draft SGIP. Tetra Tech's review identified issues and concerns that are discussed in the following general and specific comments.

GENERAL COMMENTS

1. The revisions to the SGIP and AK Steel's responses do not adequately address EPA comments (dated January 10, 2001) on the revised Soil Investigation Plan (SIP) or EPA's comments on the revised Hydrogeologic Investigation Plan (HIP) (dated February 8, 2001). In several instances, comments are only partially addressed and requested justifications are often inadequate. In other instances, the responses to the deficiency or comment and modification of the SGIP are technically deficient or inconsistent with applicable guidance. The SGIP should be further revised to provide additional clarification of several issues cited in EPA's comment letters of January 10, 2001 and February 8, 2001. The following general issues require additional clarification: (1) delineation of potential polychlorinated biphenyl (PCB) source areas, (2) characterization of PCBs in soils, (3) identification of preferential flow pathways from potential PCB source areas, and (4) interpretation and depiction of groundwater flow patterns in the perched and upper aquifers.
2. AK Steel's responses to EPA's comments and deficiencies are provided in Appendices A and B of the SGIP. In several instances, information in AK Steel's responses is inconsistent with information in the SGIP. For example, proposed HSA boring installation activities in the response to "EPA Deficiency 6a" (which requires additional borings in the vicinity of Mill Scale Area 3) do not correspond to the proposed activities in Section 4.4 of the SGIP. AK Steel's response to "EPA Deficiency 6a" proposes two additional hollow-stem auger (HSA) borings, one north of BH07 and one southwest of BH07-S50. However, Section 4.4 of the SGIP specifies two HSA borings immediately west of Mill Scale Area 3, one north and one southwest of BH07-S50. Furthermore, in some instances, EPA deficiencies are not addressed in AK Steel's responses or

through revisions to the SGIP.

The following general revisions to the SGIP are suggested:

- The SGIP should include a figure showing all proposed hollow-stem auger borings, hand auger borings, and perched and upper aquifer monitoring wells.
 - The SGIP should be revised to ensure consistency between proposed activities in responses to EPA comments and activities proposed in the SGIP.
 - The rationale for declining to adopt recommendations in EPA comments should be clearly stated in the SGIP.
3. The responses in Appendices A and B to EPA's comments, in several instances, do not adequately address EPA's requests for additional borings, monitoring wells, or chemical analyses. The following are examples of instances where the SGIP or responses to EPA deficiencies and comments do not address EPA recommendations:
- Borings proposed in the SGIP for Mill Scale Area 3 include two HSA borings; however, EPA Deficiency 6a recommends installation of four HSA borings in this area.
 - The SGIP proposes no additional boring locations in the vicinity of BH08. However, EPA Deficiency 6b recommends three additional borings west, north, and south of BH08, at a distance of 25 feet from the boring, to sufficiently evaluate the extent of PCB contamination adjacent to this location.
 - EPA Deficiency 6c states that further investigation is warranted west and north of borings BH13 and BH13-S50. The SGIP does not propose additional borings in this area due to complications from ongoing OMS operations.
 - EPA Deficiency 8 requests collection of samples for analysis from depths of 0-2 feet, 2-4 feet, 4-6 feet and 6-8 feet in a radius of 10 to 25 feet around location SS01. AK Steel's response states that no additional borings are necessary in the vicinity of SS01 because historic data have already delineated the extent of PCB contamination at this location. The rationale presented is insufficient to negate the possibility of further investigations in this area.

The SGIP should be revised to completely address all deficiencies/comments presented in EPA's January 10 and February 8, 2001, comment letters by specifying appropriate activities and procedures to collect the requested data. If AK Steel is contesting the need to conduct requested activities, sufficient supporting technical rationale and existing data must be presented in the SGIP or responses to negate the need for such activities.

4. Several of EPA's February 8, 2001, comments requests review and modification, as necessary, of figures depicting groundwater flow directions, contaminant distribution in the perched zone, and elevation of the surface of the clay. Based on inspection of the revised draft SGIP, AK Steel did review and modify these figures; however, several omissions or inconsistencies still exist.

Specific examples include the following:

- Figures depicting piezometric data and groundwater flow directions in the perched zone continue to depict groundwater contours that are drawn incorrectly based on the data shown for the perched-zone monitoring wells. It appears that groundwater flow interpretations have been erroneously modified to be consistent with the clay surface elevation contours and in some cases are clearly incorrect. These figures should be reviewed and modified as necessary.
- Inconsistencies are apparent among figures depicting the elevation of the clay surface. In some cases, elevation contours are missing. These figures should be reviewed and modified, as necessary, for consistency and to include all clay surface elevation contours.

SPECIFIC COMMENTS

1. **Section 4.4, Page 36, Paragraph 0.** The third bullet item proposes two HSA borings immediately west of Mill Scale Area 3: one to the north and one southwest of BH07-S50. EPA Deficiency 6a from the January 10, 2001, letter recommends four HSA borings in the vicinity of Mill Scale Area 3. EPA recommends that these four HSA borings be located 25 feet north, west, and south of BH07 and 25 feet west of boring BH07-S50. AK Steel's response to EPA Deficiency 6a states that three borings were completed in September 2000 at locations east, south, and west of BH07 at a distance of 50 feet and one boring was 25 feet to the southeast of BH07-S50, for a total of four borings. The response proposes two additional HSA borings, one north of BH07 and one southwest of BH07-S50. The numbers and locations of HSA borings proposed in the response do not correspond to the proposed activities in Section 4.4 of the SGIP. Neither proposal identified in the SGIP or the responses satisfies the recommendation in EPA Deficiency 6a. The SGIP and response to Deficiency 6a should be made consistent with EPA's recommendations.
2. **Section 4.4, Page 36, Paragraph 0.** The fourth bullet item proposes three HSA borings immediately north of the Former Oil Separation Ponds; one each to the west, northwest, and northeast of BH15. EPA Deficiency 7a requires three borings located (1) 25 feet north of BH15-N50, (2) 25 feet west of BH15-N50, and (3) 25 feet south of BH15-W50. AK Steel's response to Deficiency 7a proposes three additional borings in the vicinity of BH15-N50 and BH15-W50, but also states that access to the locations suggested by EPA Deficiency 7a may be impossible. The response also states that actual boring locations will be selected in the field in conjunction with EPA oversight and OMS safety personnel. The information in the bullet is inconsistent with AK Steel's response to Deficiency 7a and the boring locations requested by EPA. The SGIP should be modified to be consistent with AK Steel's response to and the boring locations requested in EPA Deficiency 7a.
3. **Section 4.4, Page 36, Paragraph 0.** The second bullet item proposes completing two hand auger borings at the "head" of the former drainage path in the low area southwest of the former oil separator ponds, but does not indicate exactly where the head of the drainage path is located.

AK Steel's response to EPA Deficiency 8 states that two hand auger borings will be installed in the marshy area south of the former oil separation ponds, at the eastern end of the former drainage path. Figures provided with the SGIP do not identify the eastern extent of the former drainage path. Due to the ambiguity regarding the boundaries of the former drainage path, it is unclear exactly where the hand auger borings will be located. The SGIP should be modified to clearly identify the boring locations. Information in AK Steel's responses and in the SGIP should also be reviewed and revised for consistency.

Furthermore, EPA Deficiency 8 requests collection of samples for analysis from depths of 0-2 feet, 2-4 feet, 4-6 feet and 6-8 feet in a radius of 10 to 25 feet around location SS01. AK Steel's response to this request states that no additional borings need to be installed in the vicinity of SS01 because historic data have already delineated the extent of PCB contamination at this location. However, EPA notes in Deficiency 8 that at location SS01-S14, the boring located furthest south in this location, PCBs were detected in soil samples at a concentration of 30 parts per million (ppm) at a depth of 3 feet. The SGIP should be modified to include borings in the vicinity of SS01 to further delineate the vertical extent of PCB contamination and the southward lateral extent of PCBs in this location.

4. **Section 4.4, Page 35, Paragraph 0.** The second bullet item proposes two HSA borings in Mill Scale Area 1 and installation of a perched-zone well may be installed if a perched zone is encountered, resulting in one boring east, and one boring south of existing well MDA-02S. However, EPA Deficiency 9 recommends at least four additional borings in the vicinity of Mill Scale Area 1, each with four discrete depth horizons analyzed for the presence of PCBs. The borings proposed in the SGIP are inconsistent with EPA's request and are inadequate for the following additional reasons:

- The locations do not appear to be adequate to determine if flow to the north from Mill Scale Area 1 is a source of PCBs in Dick's Creek.
- The proposed locations do not appear to be adequate to detect a western component of PCB migration, if such migration is occurring.
- Only three discrete depth horizons are proposed to be sampled. In addition to being inconsistent with EPA's recommendation, the number of proposed sample horizons does not appear sufficient to determine the vertical extent of PCB contamination.

Furthermore, the SGIP does not propose soil sampling during installation of the perched-zone well due to the availability of existing soil analytical data collected during the drilling/installation of nearby well MDA03S. However, well MDA03S is approximately 1,000 feet south of the proposed perched-zone monitoring well. The SGIP should be modified to propose borings north and west of Mill Scale Area 1 and additional soil sampling in this area.

5. **Figures 3, 4, 6, and 7.** These figures depict PCB contaminant concentrations in soil and groundwater. At several locations, PCB data are indicated as "not available" (NA) on the map. However, the reason for the unavailability of these data is not discussed on the figures or in the SGIP. Specifically, it is unclear whether or not data have been collected from these locations.

The SGIP and/or the figures should be amended to clearly specify the rationale for omitting data from these locations on the figures.

6. **Figures 9, 10, and 11.** These figures depict piezometric elevations and groundwater flow directions in the perched zone on various dates, and also depict the surface elevation of the native silt and clay layer that underlies the perched zone. EPA's February 8, 2001, comments noted technical inconsistencies and incorrect depictions of piezometric contours on these figures. The maps have been modified according to EPA General Comment 3 and Specific Comment 8; however, the following inconsistencies remain:

- The 650-foot groundwater elevation contour appears to be drawn incorrectly based on the data shown for monitoring wells MDA09P and MDA08P. In Figure 9, the groundwater elevation of MDA09P is 650.17 feet and the groundwater elevation of MDA08P is 647.75 feet, but the 650-foot contour line is mapped much closer to MDA08P than to MDA09P. In Figures 10 and 11, the groundwater elevations for MDA09P are 649.85 feet and 649.25 feet, respectively, and for MDA08P the groundwater elevations are 647.52 feet and 647.61 feet, respectively; however, on both figures the 650-foot contour line is plotted in the area between these two wells. The incorrect placement of the contour results in depiction of the groundwater flow direction as directly toward the interceptor trench; if the 650-foot groundwater contour was positioned correctly, groundwater would appear to be flowing directly west, toward Monroe Ditch.
- Inconsistencies exist among the contours depicting the elevation of the native silt and clay surface. For example, the map depicts most of the site at a 2-foot contour interval. However, the 652-foot contour line in the northern portion of the site, near Mill Scale Area 1, appears to have been inadvertently omitted, as the 650- and 654-foot contour lines are not separated by a 652- contour.

The data and interpretations presented on the figures should be reviewed for accuracy and revised as necessary to address these inconsistencies. Depictions of groundwater flow and native clay and silt surface elevations should be revised as necessary to address these comments.

7. **Figures 12, 13, and 14.** These figures depict groundwater elevations in the upper aquifer on various dates. These figures were revised based on recommendations in EPA Specific Comment 9 in the February 8, 2001, letter; however, some inconsistencies remain. The following inconsistencies were noted:

- These figures use a 5-foot contour interval to depict the piezometric surface. EPA Specific Comment 9 suggested reduction of the contour interval to less than 5 feet. AK Steel's response to this comment states that "a contour interval of less than 5 feet would exaggerate the degree of certainty in the ground water flow conditions shown in the figures..." However, this rationale is inconsistent with the AK Steel's depictions of groundwater flow in the perched zone (Figures 9, 10, and 11), which depict a 2-foot contour interval based on far fewer data points than are available for Figures 12, 13 and 14. A 5-foot interval

oversimplifies the complexity of the piezometric surface and “masks” areas of uncertainty regarding the full range of potential localized variations in flow directions. For these reasons, Figures 12, 13, and 14 should be revised to use a contour interval of less than 5 feet, consistent with EPA’s request.

- Figures 12, 13, and 14 do not include arrows depicting the groundwater flow direction. EPA Specific Comment 9 requests that flow diagrams for the upper aquifer include flow direction indicators in the legend and on the map to be consistent with Figures 9, 10, and 11. These flow indicators have not been added. Figures 12, 13, and 14 should be modified to include flow direction indicators.
- Some contour lines appear to be inadvertently omitted or plotted incorrectly on these figures. Figures 12 and 13 do not depict a 665-foot contour line and Figures 13 and 14 do not depict a 660-foot contour line, even though the water elevation in well MDA17S ranged from 660.88 feet (Figure 14) to 667.60 feet (Figure 13). In addition, the 640-foot contour line is plotted on the upgradient side of well MDA08S (groundwater elevation measured at 640.25 feet) on Figure 13. These figures should be reevaluated for accuracy and revised as necessary.

8. **Appendix A, AK Steel’s Response to EPA Deficiency 6b.** This response states that four HSA borings were completed around boring BH08 in September 2000. Borings were completed east, west, northwest and southwest of BH08, at a distance of 50 feet from BH08. The response proposes no additional boring locations because PCBs were detected at concentrations of less than 0.01 milligrams per kilogram (mg/kg) in soil samples from the borings located east, west, and northwest of BH08 and at a concentration of 0.42 mg/kg at the boring located southwest of boring BH08. The response states that these data are sufficient and no additional borings are necessary. However, EPA Deficiency 6b recommends three additional borings west, north and south of BH08, at a distance of 25 feet from the boring, to sufficiently evaluate the extent of PCB contamination adjacent to this location. The SGIP should be modified to include EPA’s recommended boring locations.
9. **Appendix A, AK Steel’s Response to EPA Deficiency 6c.** This response states that a soil sample was collected 50 feet north of BH13. PCBs were detected at a concentration of 0.064 mg/kg in soil samples collected at this location. The response proposes one boring west of BH13 during replacement of perched monitoring well MDA24P. This proposed boring is not mentioned in the SGIP. The response does not propose additional borings to be conducted in this area due to complications from ongoing OMS operations. EPA Deficiency 6c states that further investigation is warranted west and north of borings BH13 and BH13-S50. An effort should be made to install the borings recommended by EPA and the SGIP should be modified to propose a plan for installation of these borings.
10. **Appendix B, AK Steel’s Responses to EPA General Comment 3 and Specific Comment 9.** EPA General Comment 3, sixth bullet item, discusses elevation data for well MDA03S in Figures 12, 13 and 14 that are inconsistent with flow patterns implied by the contours. The comment requests discussion of the anomalously high piezometric elevations measured at MDA03S and reevaluation of the conceptual flow model for the upper aquifer.

These anomalous data are not discussed in Section 3.0 of SGIP, entitled "Hydrogeology and Conceptual Groundwater Flow Model," but are discussed in two responses in Appendix B of the SGIP. AK Steel's response to EPA General Comment 3 states that "groundwater elevation data in this area seems to indicate that a zone of higher hydraulic conductivity is present in this portion of the OMS area." However, AK Steel's response to EPA Specific Comment 9, third bullet item, states that "groundwater elevation data in this area seems to indicate that a zone of lower permeability material is present in this portion of the OMS area." Since permeability is directly proportional to hydraulic conductivity, both of these statements cannot be correct. Steep hydraulic gradients are generally associated with materials of low hydraulic conductivity. This inconsistency should be resolved.

11. **Appendix F, Monitoring Well Construction Logs.** Appendix F contains well construction logs for monitoring wells installed between 8/9/99 and 8/23/00. Some boring logs in Appendix F are missing information pertaining to recovery and blow counts but provide no rationale for the omission of the data. For example, the boring log for borehole number MDA-26 does not have recovery information for the 14- to 16-foot split spoon sample. The SGIP or the boring logs do not indicate the reason that no recovery information is included. The boring logs should be reevaluated and any inadvertently omitted information should be included. If the data are unavailable, the rationale should be included in a footnote.
12. **Appendix G, Standard Operating Procedure (SOP) 19, Borehole Permeability Testing.** This SOP discusses methods to be used for performing borehole permeability (slug) tests and for analysis of data from these tests. AK Steel's response to EPA Specific Comment 5 cites several American Society for Testing and Materials (ASTM) standards for conducting slug tests. However, SOP 19 does not cite these standards. SOP 19 should be modified to include the complete references to the standards. In addition, ASTM Standard D5881 is incorrectly cited in AK Steel's response as the standard for performing slug tests in unconfined aquifers and as the standard for performing slug tests in confined aquifers by critically damped well response. ASTM standard D5881 is titled "Standard Test Method for (Analytical Procedure) Determining Transmissivity of Confined Nonleaky Aquifers by Critically Damped Well Response to Instantaneous Change in Head (Slug)" (ASTM 1995). The correct guideline for performing slug tests in unconfined aquifers is ASTM standard D5912-96e1, "Standard Test Method for (Analytical Procedure) Determining Hydraulic Conductivity of an Unconfined Aquifer by Overdamped Well Response to Instantaneous Change in Head (Slug)" (ASTM 1996). This inconsistency should be resolved and SOP 19 modified as necessary.

REFERENCES

- American Society for Testing and Materials (ASTM). 1995. Method D5881-95 - Standard Test Method for (Analytical Procedure) Determining Transmissivity of Confined Nonleaky Aquifers by Critically Damped Well Response to Instantaneous Change in Head (Slug). Approved December 10. Published April 1996.
- ASTM. 1996b. Method D5912-96e1 - Standard Test Method for (Analytical Procedure) Determining Hydraulic Conductivity of an Unconfined Aquifer by Overdamped Well Response to Instantaneous Change in Head (Slug). Approved February. Published June.



Tetra Tech EM Inc.

200 E. Randolph Drive, Suite 4700 ♦ Chicago, IL 60601 ♦ (312) 856-8700 ♦ FAX (312) 938-0118

April 18, 2001

Mr. Allen Wojtas
Work Assignment Manager
U.S. Environmental Protection Agency Region 5
Enforcement and Compliance Assurance Branch (DE-9J)
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Technical Document Review
Work Assignment Cost Estimate for
Amended Technical Direction Memorandum
Dated March 22, 2001
AK Steel, Middletown, Ohio
EPA Contact No. 68-W9-9018, Work Assignment No. R05805-24**

Dear Mr. Wojtas:

Tetra Tech EM Inc. (Tetra Tech) is submitting its work assignment (WA) cost estimate for the above-referenced amended technical direction memorandum (TDM). Tetra Tech is also submitting one copy of the cost estimate directly to Mr. Gary Cygan and Mr. Michael Mikulka, the U.S. Environmental Protection Agency (EPA) technical contact/project manager and technical advisor for this facility, respectively. The technical approach and all other elements of the approved work plan for WA No. R05805 and subsequent amendments are incorporated into the cost estimate by reference.

The cost estimate has been prepared in accordance with the requirements of the TDM and discussions with EPA. The current TDM amends the TDM dated November 21, 2000 which in turn amended the TDM dated June 5, 2000 for this same facility and WA (the original TDM). The November 21, 2000, TDM revised the specific amendments of the original TDM regarding the number and types of sampling and remedial plans that EPA would like Tetra Tech to assist in reviewing. Specifically, the November 21, 2000, amended TDM formally added the hydrogeological investigation plan, the water use alternatives plan, and the soil investigation plan to the list of proposed plans that Tetra Tech may be requested to review. The November 21, 2000, TDM also clarified the number and basis of the remedial plans that Tetra Tech may be requested to review.

The March 22, 2001, TDM requests that Tetra Tech review the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" (the risk assessment work plan). It should be noted that Tetra Tech received your verbal approval to begin reviewing the risk assessment work plan in February 2001. Tetra Tech submitted technical review comments on the risk assessment work plan to EPA on February 28, 2001. Currently, at EPA's direction Tetra Tech is revising the comments to incorporate additional

Mr. Allen Wojtas
April 18, 2001
Page 2

comments received on the risk assessment work plan from the Ohio Environmental Protection Agency (OEPA). Tetra Tech has participated in several conferences calls with EPA and OEPA staff to discuss agency-specific comments on the risk assessment work plan. Tetra Tech will submit the revised comments regarding the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" during the week of April 9, 2001.

The total budget for completing the work required under the amended TDM is 83 LOE hours and \$6,117. The currently approved budget is 2,107.5 LOE and \$126,994. The revised total work assignment budget is 2,190.5 LOE and \$133,111. The cost estimate is business confidential.

Please contact me at (312) 856-8786 or Eric Morton at (312) 856-8797 if you have any questions about the cost estimate or need additional information.

Sincerely,



Mary Wojciechowski
Project Manager

Enclosure

cc: Bernie Orenstein, EPA Regional Project Officer (letter only)
Gary Cygan, EPA Technical Contact and Project Manager
✓ Michael Mikulka, EPA Technical Advisor
Ed Schuessler, Tetra Tech Regional Manager (letter only)
Art Glazer, Tetra Tech Program Manager
Eric Morton, Tetra Tech Site Manager

AK5 043622

ENCLOSURE

**WORK ASSIGNMENT COST ESTIMATE
FOR AMENDED TECHNICAL DIRECTION MEMORANDUM
DATED MARCH 22, 2000
WORK ASSIGNMENT NO. R05805-24**

(Five Sheets)

Contract No. 68-W9-9018
Work Assignment No. R05805-24

Amended TDM Dated March 22, 2001
April 18, 2001

AK5 043623

**WORK ASSIGNMENT COST ESTIMATE
FOR AMENDED TECHNICAL DIRECTION MEMORANDUM
DATED MARCH 22, 2001
WORK ASSIGNMENT NO. R05805-24**

This work assignment (WA) cost estimate was prepared in response to an amended technical direction memorandum (TDM) issued by the U.S. Environmental Protection Agency (EPA) Region 5 on March 22, 2001. The amended TDM clarifies the scope of work for Task 3 of WA No. R05805. Specifically, the amended TDM expands the scope of the original TDM dated June 5, 2000, for this same facility and WA (the original TDM) as previously amended by the TDM dated November 21, 2000 regarding the number and type of sampling and remedial plans that EPA would like Tetra Tech to assist in reviewing. The amendment affects Subtask 3 of the approved cost estimate dated July 31, 2000, based on the original TDM. The amended TDM does not affect Subtasks 1, 2, and 4 of the approved cost estimate or the original TDM.

The cost estimate for the amended TDM dated March 22, 2001, includes two tables summarizing the cost to complete the additional work specified in the amended TDM. Cost estimate details for individual subtasks are available upon request. The following section provides subtask-specific assumptions used to prepare the cost estimate. The total cost of the work assignment including funds to complete the additional work specified in the amended TDM, are summarized in the cover letter to this cost estimate.

TASK 3 -- TECHNICAL REVIEW OF DOCUMENTS

The original TDM directs Tetra Tech to complete four subtasks under Task 3. These four subtasks are listed below:

- Review background documents provided by EPA or developed by Wright State University (WSU)
- Integrate WSU information into other environmental information and prepare (1) an ecological risk assessment (ERA) and a human health risk assessment (HHRA) based on the complete data set
- Review and comment on AK Steel's sampling and analysis plan (SAP) and quality

assurance project plan (QAPP)

- Review and comment on AK Steel's proposed remedial plan

Based on the TDM dated November 21, 2000, Subtasks 3 and 4 were revised to update the number, type, and basis for the various work and remedial plans to be reviewed by Tetra Tech. The amended TDM dated March 22, 2001, does not request any additional work with regard to Subtasks 1, 2, and 4. Therefore, these subtasks are not discussed further in this cost estimate.

For Task 3, Tetra Tech estimates that a total of 83 level-of-effort (LOE) hours and \$6,117 will be needed to complete the additional work requested under the amended TDM. The subtask-specific assumptions for the additional work requested under the amended TDM are presented below.

Subtask 3

The original TDM requested that Tetra Tech review two plans -- SAP and QAPP. The November 21, 2000, TDM revised the specific amendments of the original TDM regarding the number and types of sampling plans that EPA would like Tetra Tech to assist in reviewing, adding the hydrogeological investigation plan, the water use alternatives plan, and the soil investigation plan to the list of proposed plans that Tetra Tech may be requested to review. The November 21, 2000, TDM also clarified the number and basis of the remedial plans that Tetra Tech may be requested to review.

The March 22, 2001, TDM requests that Tetra Tech review the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" (the risk assessment work plan). It should be noted that Tetra Tech received verbal approval to begin reviewing the risk assessment work plan in February 2001 from the EPA work assignment manager (Mr. Allen Wojtas). Tetra Tech submitted technical review comments on the risk assessment work plan to EPA on February 28, 2001. Currently, at EPA's direction Tetra Tech is revising the comments to incorporate additional comments received on the risk assessment work plan from the Ohio Environmental Protection Agency (OEPA). Tetra Tech has participated in several conferences calls with EPA and OEPA staff to discuss agency-specific comments on the risk assessment work plan. Tetra Tech will submit the revised comments regarding the "Work Plan for

Human Health and Ecological Risk Assessment, Revision 1" during the week of April 9, 2001.

Tetra Tech estimates that its review of the "Work Plan for Human Health and Ecological Risk Assessment, Revision 1" will require 83 LOE. Tetra Tech's review will focus on whether (1) EPA's comments on the original draft work plan were adequately addressed and (2) the work plan is technically adequate and is complies with relevant EPA human and ecological risk assessment guidance. Tetra Tech also factored in resources to merge relevant OEPA comments on the work plan into the comments submitted by Tetra Tech on February 28, 2001, and submit a revised set of comments to EPA.

TRAVEL

No additional travel beyond that described in the approved cost estimate is required to complete the expanded scope presented in the amended TDM.

**Tetra Tech EM Inc.
Tasks Summary**

| Task Number | Task 1 | Task 2 | Task 3 | Task 4 | Task 5 | Task 6 | Task 7 | Task 8 | Task 9 | Task 10 | Task 11 | Task 12 | |
|---|--------|--------|---------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|
| Task Name | | | | | | | | | | | | | TOTAL |
| Tetra Tech Labor Estimate | | | | | | | | | | | | | |
| P4 | 0 | 0 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 65 |
| P3 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |
| P2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| T2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clerical | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Team Sub Labor Estimate | | | | | | | | | | | | | |
| Professional Hours | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clerical Hours | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Tetra Tech Professional Labor Cost | \$0 | \$0 | \$2,807 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$2,807 |
| Total Tetra Tech Clerical Labor Cost | \$0 | \$0 | \$27 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$27 |
| Total Tetra Tech Labor Cost | \$0 | \$0 | \$2,834 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$2,834 |
| Total Tetra Tech Travel Cost | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Total Tetra Tech ODCs | \$0 | \$0 | \$211 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$211 |
| Team Sub Costs | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Non-Team Sub Cost | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |
| Indirect Costs | \$0 | \$0 | \$2,676 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$2,676 |
| Subtotal Cost | \$0 | \$0 | \$5,721 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$5,721 |
| Fixed Fee | \$0 | \$0 | \$396 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$396 |
| TOTAL COST | \$0 | \$0 | \$6,117 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$6,117 |

Notes:

- 1 See attached sheets for detail on cost breakdown
- 2 Indirect costs include fringe benefit, overhead, and general administrative costs.



TETRA TECH EM INC.
REPA ZONE III CONTRACT 68-W-99-008
WORK ASSIGNMENT SUMMARY

W.A. NO. : R05805
W.A. NAME : AK Steel Amended TDM

| LABOR CATEGORY | Hours | Costs |
|-----------------------|-----------|---------|
| P4 | 65 | \$2,367 |
| P3 | 18 | 440 |
| P2 | 0 | 0 |
| P1 | 0 | 0 |
| T2 | 0 | 0 |
| Subcontractors | 0 | |
| Total LOE | 83 | |
| Clerical : Tetra Tech | 2 | 27 |
| Subcontractors | 0 | |
| TOTAL HOURS | 85 | |

| | |
|--------------------------------|----------------|
| Tetra Tech Direct Labor | \$2,834 |
| Subcontractors | 0 |
| Vendors | 0 |
| Travel Costs : Air | 0 |
| Per Diem | 0 |
| Hotel | 0 |
| Ground | 0 |
| Total Travel Costs | 0 |
| ODCs : Reproduction | 23 |
| Freight | 20 |
| Computer | 118 |
| Telephone | 50 |
| Supplies | 0 |
| Equipment | 0 |
| All Other | 0 |
| Total ODCs | 211 |
| Indirect Costs | 2,676 |
| Total Cost | 5,721 |
| Fixed Fee | 396 |
| TOTAL COST & FEE | \$6,117 |

Tetra Tech EM Inc. - Confidential Business Information



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

MEMORANDUM

DATE: March 16, 2001

SUBJECT: Technical Direction Regarding: AK Steel, Middletown, OH
EPA Contract #: 68-W-99-018
Work Assignment #: R05805 (Technical Document Review)

FROM: Michael Mikulka and Gary Cygan
Technical Advisor Technical Contact/Project Manager

THRU: Allen Wojtas, Work Assignment Manager

TO: Ed Schussler, Regional Manager
TetraTech EM, Inc.

This **amended** Technical Direction Memorandum (TDM) clarifies the scope of work for the Tasks 1, 2 or 3 of the Work Assignment identified above, namely to provide expert support to the U.S. EPA technical advisor for document review and potential case development. Amended portions are shown in **bold type** in the text that follows. This technical direction will not alter the LOE/COST of the work assignment, nor change the period of performance.

BACKGROUND:

The AK Steel facility is an integrated steel processing facility located within the City of Middletown, Ohio. Dick's Creek passes through the facility along its southern boundary, but north of its (past and) present slag and other steel processing residuals processing area. More recently, AK Steel was cited by the State for illegal discharges of waste materials containing, among other constituents, PCBs in measurable quantities. AK Steel has ceased the discharges. Past and current sampling done by AK Steel, the Ohio EPA, Wright State University, and USEPA, has shown that Dick's Creek and the landfill tributary which runs from south to north through the slag processing area, are contaminated with PCBs and PAHs. USEPA has or will shortly order AK Steel to develop and implement a remedial plan to remove or otherwise abate the potential imminent and substantial endangerment associated with the releases.

The purpose of this TDM is to request assistance for Region 5, through document review and technical support, in evaluating both existing human health and ecological risk levels associated with existing contamination within Dick's Creek and tributaries in Middletown, Ohio, associated with past and current solid waste management practices at the AK Steel facility in Middletown, OH, and in providing technical support to USEPA

AK5 043629

in evaluating AK Steel's responses to the Order. This will include a more rigorous analysis than currently completed by USEPA as to whether the actions proposed by AK Steel will be sufficient to abate the ecological and human health risks presented by the contaminants currently in the environment.

II. ENFORCEMENT NEEDS AND REGULATORY ACTION BEING SUPPORTED

The information from this evaluation will support ongoing enforcement litigation, including site-wide corrective action, against AK Steel related to its operations in Middletown, OH. The purpose of the activity is to document the existing ecological and human health risks, and to confirm that any planned remedial measures are technically adequate and sufficient to abate the existing risks posed by leaving the contaminants released in the environment.

III. SPECIFIC TASKS TO BE PERFORMED BY THE CONTRACTOR & SCHEDULE FOR COMPLETION

1. Review documents to be provided by USEPA or developed by Wright State University. Documents to be reviewed include the following:

- A. USEPA Order to AK Steel
- B. Ohio EPA sampling data from 1995, 1997 and 1999 sampling events
- C. AK Steel sampling data from 1996 and 1999 sampling events
- D. USEPA sampling data from 1999 sampling event
- E. Wright State University data from sampling events conducted after 1995
- F. USEPA determination of existing baseline risk, based on B, C and D, above.

2. Integrate the Wright State information into the other environmental data, and update the ecological and human health risks using the complete data set, within 60 calendar days of receipt of information.

3. Upon receipt of AK Steel's proposed or revised sampling plan(s) and QAPP, provide comments to USEPA within 14 calendar days as to whether the plan will provide sufficient additional information needed to assess if risks to human health and the environment will be adequately characterized. Workplans to be submitted by AK Steel which may require review by TetraTech for technical adequacy include: Sampling and Analysis Plan (sediments), QAPP, Water Use Alternatives Plan, Soil Investigation, Hydrogeological Investigation, and future remedial design workplans/documents. **In addition, TetraTech will review the Human Health and Ecological Risk Assessment Work, Revision 1.**

AK5 043630

4. Upon receipt of AK Steel's sampling results and proposed remedial plan(s), provide comments to USEPA as to whether the plan(s) will abate existing risks to human health and the environment, and provide a calculation of risk abatement provided by the plan, within 14 calendar days of its receipt. AK will be submitting investigation reports for each phase of the field work, including sediment sampling results, PCB source investigation/soil sampling results, and hydrogeological investigation/ groundwater sampling results.

5. Consult with the WAM, and Technical Contacts as necessary during the conduct of the work to clarify technical requirements.

IV. COMPLETION DATE

The Order issued to AK Steel provides tight time frames for submission and review of information. Review and comments to USEPA will be necessary consistent with these time frames.

TRAVEL REQUIREMENTS

Travel will be required to the state offices in Columbus, OH or Dayton, Ohio, for up to 2, 1 day meetings for 2 persons related to the project. In addition, a trip to the facility in Middletown, Ohio for 1-2 persons for up to 2 additional days to complete a visual inspection of the location, and to meet with staff from OEPA and/or Wright State University will be required. It is currently anticipated that USEPA staff will accompany contractor staff to the site, so that contractor staff will not need appropriate letters of introduction for site access.

TECHNICAL DIRECTION

The Technical Contact/Project Manager for the site is Lisa Geist, who can be reached at 312-886-0878. Her address is U.S. EPA, Enforcement and Compliance Assurance Branch, Waste, Pesticides and Toxics Division (DE-9J), 77 W. Jackson Blvd., Chicago IL 60604. Facsimile (FAX) number is (312) 353-4342. Additional technical support and clarification may be sought from Michael Mikulka who can be reached at (312) 886-6760.

cc: Bernie Orenstein, RPO
Joan Thurman, CO



State of Ohio Environmental Protection Agency

Southwest District Office

Dayton, Ohio 45402-2911 401 East Fifth Street TELE: (937) 285-6357 FAX: (937) 285-6249 Bob Taft, Governor
Maureen O'Connor, Lt. Governor

Christopher Jones, Director

March 1, 2001

Kurt Hileman
AK Steel Corporation
1801 Crawford Street
Middletown, Ohio 45043

RE: NOTICE OF VIOLATION
SEEPS DISCHARGING TO TRIBUTARY OF DICKS CREEK
AND DICKS CREEK

Dear Mr. Hileman:

On February 26, 2001, you informed me that your analytical data showed that PCBs were detected in seeps number 10, 11 and 12. These seeps were seen and sampled by AK's contracted sampling personnel on February 6, 2001 (#10) and February 9, 2001 (#11, 12). Seep number 10 is located on the South bank of Dicks Creek upstream from AK outfall 002. Seep numbers 11 and 12 are located on the "landfill" tributary of Dicks Creek, West of the slag processing area, on the North bank near the culvert. Your reported results of the analyses for PCBs and measured field pH are below.

| <u>Seep #</u> | <u>PCB concentration in :g/l</u> | <u>pH in s.u.</u> |
|---------------|----------------------------------|-------------------|
| 10 | 1.29 | 12.1 |
| 11 | 7.58 | 12.4 |
| 12 | 6.89 | 12.4 |

The Ohio Water Quality Standards for PCBs are 0.00079 :g/l for Human Health 30-day average, 0.001 :g/l for Outside Mixing Zone 30-day average, and 0.0 :g/l for Drinking Water. The Ohio Water Quality Standards for pH are 6.5 - 9.0 S.U.

The seep discharges described above are in violation of Ohio Revised Code section 6111.04 and Ohio Administrative Code section 3745-1. The seeps are a threat to human health and the environment. AK Steel Corporation must contact this office to discuss what measures will be taken to cease these discharges along with dates associated with these actions.

It is acknowledged that AK Steel has resampled the seeps and are awaiting the analytical results. However, these samples have been filtered, which we feel is inappropriate in regard to the analysis for PCBs as this constituent by its nature will adsorb onto particulate matter. You have requested that Ohio EPA provide AK Steel with a standard procedure for sampling seeps which will be agreeable to AK Steel and this agency. I will confer with our sampling staff and will contact you soon to discuss

this further.

Kurt Hileman, AK Steel
March 1, 2001
Page 2

If you have any questions concerning this Notice of Violation, please call me at (937) 285- 6101.

Sincerely,

Mary Osika
Division of Surface Water

cc: Ron Murray, Middletown Health Department
Bob Karl, Ohio Attorney Generals Office
Gary Cygan, USEPA - Region 5



Mary Osika
<Mary.Osika@epa.state.oh.us>

03/07/01 01:51 PM

To: Michael Mikulka/R5/USEPA/US@EPA
cc:
Subject: Notice of Violation - AK Steel Seeps

Here is the NOV I sent AK Steel recently. Let me know if you have any questions.

Mary Osika
Division of Surface Water
(937) 285-6101



Seepnov.wpd

AK Steel, Middletown Works, Hydrogeologic Investigation Plan, Revision #1
Draft U.S. EPA Comments for Discussion February 8, 2001
Subject to Revision or Augmentation
DRAFT GENERAL COMMENTS

1. The revised HIP does not adequately address EPA's comments of November 14, 2000. In some instances, comments are not addressed, and no supporting rationale is provided. In other instances, comments are only partially addressed, and requested justifications are often inadequate. The plan should be further revised to provide additional clarification of several issues cited in EPA's November 14, 2000, comment letter. Some of the issues that still require clarification involve (1) elimination of contaminated groundwater seepage to surface waters, (2) prevention of discharges that violate state water quality standards, (3) monitoring the effectiveness of the current interceptor trench system, and (4) delineation of high-pH groundwater in the vicinity of the slag processing area as required by Paragraph 146 of the AOC.
2. The revised HIP fails to include installation of a deep monitoring well at location GM-35S and additional sampling of deep monitoring wells. EPA General Comment 10 in the November 14, 2000, letter calls for (1) additional sampling of deep monitoring wells in the slag processing area and (2) installation of a deep monitoring well in the vicinity of location GM-35S (south of the boneyard) with subsequent sampling for polychlorinated biphenyl (PCB) and polynuclear aromatic hydrocarbon (PAH) analyses. The plan presents a rationale for not installing additional wells in the northern and central portions of the slag processing area but provides no rationale for not installing a deep well in the southern part of the area. The plan only states that there is no evidence of northward migration of PCBs and that no apparent pathways exist for PCB migration to Dick's Creek from the potential source areas of the Former Drainage Swale and Mill Scale Area 3. However, the purpose of installing a deep well in the southern part of the area is to evaluate the vertical extent of contamination at a location where contamination has been detected in shallow (overlying) zones. Absent further justification, the plan should be further revised to include installation of this well as requested by EPA. The plan should also be revised to include the additional deep well sampling and analyses for the slag processing area.
3. Several of EPA's November 14, 2000, comments, including General Comments 6 and 10 and Specific Comments 13, 14 and 15, call for installation of additional monitoring wells in the northern and central parts of the OMS operations area. The revised HIP does not include installation of additional wells and does not provide adequate rationale for not installing additional wells. The revised HIP only states that there is no need for additional wells because the site hydro-geology and groundwater flow patterns are adequately understood and are monitored by the existing well network. If AK Steel maintains its position that additional perched-zone wells are not required, this position should be clearly supported by evidence that sufficient data exist and have been correctly interpreted to provide a reasonable degree of confidence that the contaminant source areas and migration pathways have been adequately characterized. However, review of the revised HIP revealed several apparent inconsistencies among the interpretations of geologic, piezometric, and contaminant distribution data. In some instances, key supporting data are not provided in the revised HIP's text or figures.

The plan should be further revised to include a sufficient rationale for the proposed numbers and locations of wells that will comprise the final monitoring network. Specifically, the plan should be revised to include the information discussed below.

- Figures depicting groundwater flow, contaminant distribution, and clay surface elevation data should be reviewed and modified as necessary to include data that appear to have been inadvertently omitted. For example, Figure 5 is missing PCB concentrations, Figure 12 is missing groundwater elevation data for well MDA24P, Figures 13 and 14 are missing groundwater elevation data for wells MDA22P and MDA24P, and Figures 12 through 14 are missing clay elevation contours extending to the north and northeast.
 - The perched-zone groundwater flow patterns depicted in the figures are complex, and in some instances, distinct changes in flow direction are shown adjacent to monitoring points that lack data values. The figures should include piezometric elevation measurements for all wells. If particular data were not used to develop the contours, a rationale for this approach should be provided.
 - Boring logs for the three new wells installed in September 2000 should be provided in the plan.
 - The figures should be modified to include clay surface elevations and, where applicable, perched-zone groundwater elevations in the area between the rail line and Dick's Creek.
 - In some figures, the groundwater flow direction in the perched zone appears to be inconsistent with the surface elevation map for the underlying clay and the contaminant distribution pattern in the perched zone. Interpretations of groundwater flow direction should be reviewed and modified as necessary. For example, the groundwater elevation contours depicted in Figures 12, 13 and 14 imply that groundwater in the perched zone generally flows toward the interceptor trench. The plan indicates that PCBs have been detected in water in the trench. However, the PCB values shown in Figure 4 for the wells nearest to the trench are non-detects. Also, in Figures 12 through 14, the 650-foot contours (as depicted) indicate that groundwater is flowing north/northeast, essentially "upslope" along the underlying clay in the vicinity of monitoring well MDA22P, and therefore are inconsistent with the concept that the topographic highs on the clay layer form a boundary to flow in the perched zone in this area.. These inconsistencies should be resolved.
 - The piezometric elevation data for the upper aquifer shown on Figures 15, 16 and 17 do not support the depictions of the elevation contours, particularly in the vicinity of well MDA03S. The data depicted indicate that the 640-foot elevation contour is placed incorrectly relative to well MDA03S in some instances, and overall, the elevation data are inconsistent with the flow patterns implied by the contours. These data may be indicative of several factors, such as (1) erroneous elevation measurements (2) well MDA03S is monitoring a different zone than the other "upper aquifer" wells (3) the upper aquifer at this location is hydraulically connected to overlying zones or the Monroe Ditch or (4) other, unknown factors requiring further investigation to allow effective evaluation of flow in this area. The conceptual flow model for the upper aquifer should be reevaluated. Groundwater elevation data for the upper aquifer should be reevaluated and contours revised. The anomalously high piezometric elevations measured in well MDA03S should be discussed in the text.
4. The revised HIP does not include ongoing monitoring down gradient from the interceptor trench to evaluate the effectiveness of the trench system. EPA General Comment 4 in the November

14, 2000, letter requests that the plan define methods for evaluating the effectiveness of the current trench system in capturing all groundwater flow toward the landfill tributary or Dick's Creek and preventing PCB discharges to the environment. The plan should be further revised to provide quantitative information on the effectiveness of the interceptor trench system. Specifically, the plan should include analytical results for groundwater samples collected down gradient from the system and up gradient from the surface water bodies.

5. The figures depicting groundwater flow, particularly those for the perched zone, do not depict flow in various hydrogeologic units north and west of the slag processing area. EPA Specific Comment 6 in the November 14, 2000, letter requests delineation of groundwater flow in these units. The plan should be further revised to depict flow in these units or to provide a rationale for not doing so. It is recommended that at least 2 well clusters should be installed between Dick's Creek and the closed solid waste management unit east of Monroe Ditch. Additional monitoring wells should also be installed both north and south of GM-36W, and 2 additional wells should be installed both north and south of Monroe Ditch west of GM-45S.
6. The revised HIP does not explicitly outline a method for determining the transport mechanisms for PCB migration in groundwater. EPA General Comment 11 in the November 14, 2000, letter requests that the plan propose a method for characterizing the PCB transport mechanisms within each hydrogeologic unit. The plan does state that filtered and unfiltered samples will be collected using low-flow techniques, but it discusses only metal analysis and does not address the requested sampling and analytical techniques for PCBs. The plan should be revised to present a method for determining the transport mechanisms for PCB migration.
7. The revised HIP does not adequately address EPA's November 14, 2000, comments regarding depths of and techniques for installation of new monitoring wells (see EPA Specific Comments 14, 15, 17, 18, and 22), as the revised HIP does not include any additional monitoring wells. Applicable portions of EPA's comments should be addressed in the event that additional monitoring wells are required.
8. Many of EPA's November 14, 2000, comments are not specifically addressed; rather, portions of the text cited in these comments appear to have been deleted from the plan. Sections have been added, deleted, and renumbered in the revised HIP. Review of the plan would be facilitated by (1) a list of EPA's comment numbers with summaries of AK Steel's responses to the comments and (2) a summary table providing the EPA comment numbers and the specific locations in the plan where the comments are addressed.

SPECIFIC COMMENTS

1. **Section 2.1, Page 4, Paragraph 2.** This paragraph states that the interceptor trench and lateral operate effectively. This statement appears to be based in part on visual observations, as current monitoring includes only sampling of the groundwater collected in the trench and lateral. As discussed in General Comment 4 herein and in EPA General Comment 2 in the November 14, 2000, letter, the plan should include provisions for monitoring the effectiveness of the trench system in intercepting all groundwater flow. The plan indicates that groundwater flow in the OMS operations area will continue to be monitored, but it does not specifically state that groundwater flow to Monroe Ditch will continue to be monitored and does not provide for collection of samples along the stream bank to demonstrate that contaminated flow is not bypassing the system. The plan should be revised to include (1) a strategy for monitoring

groundwater flow to Monroe Ditch and (2) collection of samples to demonstrate that the system is intercepting flow.

2. **Section 2.6.3, Pages 16 and 17.** This section discusses the conceptual model of perched-zone groundwater flow converging in the area of the interceptor system. Ultimately, the conceptual model of groundwater flow presented in the plan will serve as the working hypothesis for the hydrogeologic investigation. However, review of the data in Figures 4, 12, 13, and 14 reveals apparent inconsistencies that do not support the conceptual model. The plan should be further revised to address these apparent inconsistencies (see Specific Comment 7 herein). Moreover, the conceptual model should be re-evaluated based on these apparent inconsistencies and revised as necessary.
3. **Section 2.6.3, Page 17, Paragraph 3.** This paragraph states that groundwater flow in the perched zone is collected by the interceptor trench and lateral. As previously discussed, the AOC requires that the effectiveness of the trench system be demonstrated, but no specific procedures for doing so are included in the revised HIP. The plan should be further revised to (1) provide for collection of samples along the bank of Monroe Ditch and (2) discuss the ongoing collection of sediment and surface water samples in Monroe Ditch in order to demonstrate that contaminated groundwater is not bypassing the system.
4. **Sections 3.1, Page 21, and 3.3, Page 21, Paragraph 2.** The 22 wells identified in Table 2 are proposed for additional monitoring and sampling as part of the plan. In referring to Table 2, well MDA26S could not be located on the Figures, only MDA26P. Please clarify. Also, it is unclear why well MDA02S should not be included in the group of wells to be monitored and sampled. EPA has not agreed that Mill Scale Area 1 is not a possible source area for PCBs. Therefore, well MDA02S should be included in the monitoring and sampling scheme. Looking further at wells excluded from monitoring and sampling, it is noted that both wells MDA22P and MDA 24P were excluded. Both these wells should be added into the monitoring/sampling network.
5. **Section 3.5, Page 22.** This section discusses methods to determine the permeability of the aquifer materials but does not fully address EPA Specific Comment 22 in the November 14, 2000, letter. The plan states that slug tests will be performed on wells MDA03P, MDA08S, MDA15S, and MDA25P to determine the permeability of the aquifer material in which each well is set. However, the plan does not specify the slug test and associated data interpretation methodologies to be used. The plan should be further revised or a standard operating procedure (SOP) should be included to specify how the slug tests will be performed and how the slug test data will be interpreted.
6. **Figure 5.** This figure depicts the PCB distribution in the upper aquifer. No data values are depicted adjacent to the monitoring points. Data values should be depicted in the figure; if all values were non-detects, "ND" labels should be added as stated in the figure legend.
7. **Figures 6, 8, 9, and 11.** These figures depict cross section locations and the geologic cross sections themselves. However, the cross section lines do not extend to Dick's Creek. EPA General Comment 2 in the November 14, 2000, letter requests a cross section that extends through the northern portion of the slag processing area to Dick's Creek. The figures should be revised to provide the information requested.
8. **Figures 12, 13, and 14.** These figures depict groundwater flow in the perched zone on various

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dates. Several omissions and inconsistencies noted on these figures should be addressed as discussed below.

- In each figure, the legend contains a reference to the "Elevation Contour" (red contour) but is unclear as to what surface is being referred to. Presumably, the surface is the top of the clay that underlies the perched zone. The legend entry should be clarified.
- In each figure, the legend contains an arrow that should be used to depict groundwater flow direction. However, the flow direction is not indicated using the arrow defined in the legend in the flow diagrams. The flow direction or directions should be shown in each figure using the defined arrow.
- Complex piezometric flow patterns are depicted in the figures, including many abrupt changes in direction. However, at several perched-zone monitoring locations near the points where these abrupt changes are depicted, no piezometric data are included (MDA22P in Figures 13 and 14 and at MDA24P in Figures 12, 13, and 14). For this reason, it is unclear whether data were not collected at these points or data for these points were omitted based on some rationale. The figures should be revised to depict all available perched-zone piezometric data, and the rationale for exclusion of any data should be provided.
- The figures do not depict the clay surface and the groundwater flow conditions in much of the area north of the railroad. EPA General Comment 2 in the November 14, 2000, letter requests a map of the surface of the clay unit in the northern portion of the slag processing area with contours extending to Dick's Creek. Previous sections of the revised HIP state that a southeast- to northwest-trending topographic high on the surface of the clay prevents northward flow in the perched zone. However, the clay surface contours do not clearly depict such a divide, as they do not extend far enough to the north. Clay surface elevations, piezometric data, and groundwater flow data (where applicable) should be shown for this area, including data obtained at the three new monitoring wells installed in the northern part of the area pursuant to the AOC. The contours depicted should clearly demonstrate that a groundwater flow boundary exists in the perched zone as described in the text.
- Section 2.6.3 of the revised HIP states that the slope of the underlying clay surface controls flow in the perched zone. However, depictions of groundwater flow directions in the figures appear to be inconsistent with the clay surface elevation data shown. For example, flow in the vicinity of well MDA22P is depicted as upslope (northward) on the clay, which slopes steeply to the southwest, and at its east end, the 650-foot contour turns abruptly toward the reported topographic high that AK Steel claims is a boundary to flow in the perched zone. Furthermore, the contaminant distribution map for the perched zone in Figure 4 does not appear to be consistent with the flow patterns depicted in Figures 12, 13, and 14, as these patterns converge toward the interceptor trench. Concentrations of PCBs in the area between the suspected former source areas and the former seep location are depicted as either low or non-detects. As depicted in Drawing No. 4, boreholes BH04 and BH06, located along the drainage pathway, were dry. These results are inconsistent with the overall conceptual model of converging flow in the vicinity of the former seep location and interceptor trench. The figures' depictions of groundwater flow should be re-evaluated and modified as necessary. Also, explanations

of the apparent inconsistencies discussed in this comment should be provided in the text of the plan.

9. **Figures 15, 16, and 17.** These figures depict groundwater flow in the upper aquifer in March 1999, April 2000 and September 2000, respectively. The data presented appear insufficient to support the upper aquifer's piezometric surface depicted on the figures, which suggest flow converging from the east and west along Monroe Ditch; abrupt inflection points in the contours; and steep hydraulic gradients given the type of aquifer materials (sand and gravel). Specific examples of omissions or inconsistencies noted include:

- The flow diagrams for the upper aquifer do not include flow direction indicators in either the legend or on the map. Arrows depicting the flow direction should be added, consistent with Figures 12, 13, and 14.
- The figures depict several wells for which no piezometric data are shown. For example Figure 16 does not present data for wells MDA14S, MDA15S, MDA16S, MDA17S, or MDA36S. Figure 15 does not include piezometric elevation data for well MDA36S. Figure 17 does not include data for wells MDA16S or MDA26S. While the text indicates that wells MDA26S, MDA27S, and MDA28S were not installed until 2000, no rationale for the exclusion of the MDA26S data in September 2000 (Figure 17) or the exclusion of the other data points is presented in the HIP. It is unclear if data were not collected at these points, or if these points were omitted while generating the contours due to other rationale. The map symbols and legend should clearly indicate if data were not collected from any wells shown on the figure, with explanatory annotations (for example "NI" for "not yet installed", or "NA" for "not accessible"). All elevation data collected on each day should be presented on the figures; rationale for exclusion of any data points during the contouring process should be thoroughly supported and presented in the HIP.
- Piezometric elevation data presented for well MDA03S on Figures 15, 16, 17 are consistently higher than the elevations reported for monitoring well MDA08S. However, the contours as drawn generally suggest converging and northward flow in the shallow aquifer in this area. Although not readily apparent due to the large contour intervals depicted, the piezometric elevations measured in well MDA03S are inconsistent with the prevailing gradient depicted on the figures. No explanation for this inconsistency is provided in the HIP. Furthermore, on Figures 15 and 17 the 640-foot elevation contour is depicted on the apparent upgradient side of well MDA03S; however, the elevations reported for well MDA03S are higher than 640 feet. The figures should be revised to depict accurate placement of piezometric contours based on all of the available data and to accurately reflect piezometric contours in the vicinity of this well. Reasons for the anomalously high groundwater elevation at well MDA03S, as well as potential ramifications on the interpreted flow direction, should be discussed in the HIP text.
- The piezometric contour intervals depicted (5 or 10 feet, depending on the date) and the absence of contours in the depicted downgradient direction from well MDA03S oversimplify the complexity of the piezometric surface. Depictions of flow should be reevaluated and verified using all available data. After addition of any other available data requested in prior bullets of this comment, the figures should be revised to (1) depict the piezometric surface using a smaller contour interval, small enough to allow

depiction of the aforementioned conditions in the vicinity of well MDA03S and (2) extend the contours as far downgradient as allowed by the available data.

10. **Appendix A, GW-SOP-5, Page A-8, Item 8.** This SOP states that well development using a hand bailer will be considered complete if three to five well volumes of groundwater have been removed from the well; pH, specific conductance, turbidity, and temperature readings have stabilized; or both. However, EPA Specific Comment 25 in the November 14, 2000, letter indicates that proper well development may require removal of significantly more groundwater under some circumstances. An Ohio Environmental Protection Agency (OEPA) Division of Drinking and Ground Waters technical guidance dated 1995 specifies that well development should continue until pH, temperature, and specific conductance readings are within ± 10 percent for at least three successive well volumes and until the turbidity reading is below 5 nephelometric turbidity units. This technical guidance also states that if these conditions are not achieved, well development may stop after (1) at least 10 well volumes have been removed, (2) several development procedures have been attempted, and (3) proper well construction has been verified. The SOP should be revised to make the well development discussion consistent with the OEPA technical guidance.
11. **Appendix A, GW-SOP-9, Page A-16.** EPA Specific Comment 8 in the November 14, 2000, letter requests that this SOP be modified to discuss sample collection techniques that could be used to aid in determining PCB transport mechanisms. The SOP does not adequately address this comment. The SOP should be revised to include a strategy for sample collection in order to determine the transport mechanisms for PCBs. Furthermore, the text in Section 3.3, on Page 21 of the revised HIP indicates that samples will be collected for metal analysis using low-flow techniques and that filtered and unfiltered samples will be collected. The SOP should be revised to make it consistent with the sample collection procedures discussed in the text.
12. **Appendix A, GW-SOP-10, Pages A-18 and A-19.** This SOP addresses low-flow sampling techniques. However, the SOP does not specify the type of pump to be used. Item 6 states that dedicated tubing will be suspended in each well, implying that the type of pump to be used may be something other than a submersible pump or a gas-lift bladder pump. Because of the potential for aeration of samples, other types of pumps, such as peristaltic pumps, should not be used (see OEPA's 1995 technical guide). The SOP should be revised to specify that low-flow purging and sampling will be conducted using only submersible or bladder pumps

2/6/01

Sent → AK, OEPA

① Conceptual model needed first

TT.
- Guy Montfort.

Hydrology

DRAFT GENERAL COMMENTS

AK Steel.

1.

The revised HIP does not adequately address EPA's comments of November 14, 2000. In some instances, comments are not addressed, and no supporting rationale is provided. In other instances, comments are only partially addressed, and requested justifications are often inadequate. The plan should be further revised to provide additional clarification of several issues cited in EPA's November 14, 2000, comment letter. Some of the issues that still require clarification involve (1) elimination of contaminated groundwater seepage to surface waters, (2) prevention of discharges that violate state water quality standards, (3) monitoring the effectiveness of the current interceptor trench system, and (4) delineation of high-pH groundwater in the vicinity of the slag processing area as required by Paragraph 146 of the AOC.

definition needed

① necessary to define what qual. in non-perched horizons -

The revised HIP fails to include installation of a deep monitoring well at location GM-35S and additional sampling of deep monitoring wells. EPA General Comment 10 in the November 14, 2000, letter calls for (1) additional sampling of deep monitoring wells in the slag processing area and (2) installation of a deep monitoring well in the vicinity of location GM-35S (south of the boneyard) with subsequent sampling for polychlorinated biphenyl (PCB) and polynuclear aromatic hydrocarbon (PAH) analyses. The plan presents a rationale for not installing additional wells in the northern and central portions of the slag processing area but provides no rationale for not installing a deep well in the southern part of the area. The plan only states that there is no evidence of northward migration of PCBs and that no apparent pathways exist for PCB migration to Dick's Creek from the potential source areas of the Former Drainage Swale and Mill Scale Area 3. However, the purpose of installing a deep well in the southern part of the area is to evaluate the vertical extent of contamination at a location where contamination has been detected in shallow (overlying) zones. Absent further justification, the plan should be further revised to include installation of this well as requested by EPA. The plan should also be revised to include the additional deep well sampling and analyses for the slag processing area.

3.

Several of EPA's November 14, 2000, comments, including General Comments 6 and 10 and Specific Comments 13, 14 and 15, call for installation of additional monitoring wells in the northern and central parts of the OMS operations area. The revised HIP does not include installation of additional wells and does not provide adequate rationale for not installing additional wells. The revised HIP only states that there is no need for additional wells because the site hydro-geology and groundwater flow patterns are adequately understood and are monitored by the existing well network. If AK Steel maintains its position that additional perched-zone wells are not required, this position should be clearly supported by evidence that sufficient data exist and have been correctly interpreted to provide a reasonable degree of confidence that the contaminant source areas and migration pathways have been adequately characterized. However, review of the revised HIP revealed several apparent inconsistencies among the interpretations of geologic, piezometric, and contaminant distribution data. In some instances, key supporting data are not provided in the revised HIP's text or figures.

7FIX

The plan should be further revised to include a sufficient rationale for the proposed numbers and locations of wells that will comprise the final monitoring network. Specifically, the plan should be revised to include the information discussed below.

any vertical grad.
measured.

direction @ all levels.

3D

Fix

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- In some figures, the groundwater flow direction in the perched zone appears to be inconsistent with the surface elevation map for the underlying clay and the contaminant distribution pattern in the perched zone. Interpretations of groundwater flow direction should be reviewed and modified as necessary. For example, the groundwater elevation contours depicted in Figures 12, 13 and 14 imply that groundwater in the perched zone generally flows toward the interceptor trench. The plan indicates that PCBs have been detected in water in the trench. However, the PCB values shown in Figure 4 for the wells nearest to the trench are non-detects. Also, in Figures 12 through 14, the 650-foot contours (as depicted) indicate that groundwater is flowing north/northeast, essentially "upslope" along the underlying clay in the vicinity of monitoring well MDA22P, and therefore are inconsistent with the concept that the topographic highs on the clay layer form a boundary to flow in the perched zone in this area.. These inconsistencies should be resolved.
- The piezometric elevation data for the upper aquifer shown on Figures 15, 16 and 17 do not support the depictions of the elevation contours, particularly in the vicinity of well MDA03S. The data depicted indicate that the 640-foot elevation contour is placed incorrectly relative to well MDA03S in some instances, and overall, the elevation data are inconsistent with the flow patterns implied by the contours. These data may be indicative of several factors, such as (1) erroneous elevation measurements (2) well MDA03S is monitoring a different zone than the other "upper aquifer" wells (3) the upper aquifer at this location is hydraulically connected to overlying zones or the Monroe Ditch or (4) other, unknown factors requiring further investigation to allow effective evaluation of flow in this area. The conceptual flow model for the upper aquifer should be reevaluated. Groundwater elevation data for the upper aquifer should be reevaluated and contours revised. The anomalously high piezometric elevations measured in well MDA03S should be discussed in the text.

indicating of
v. gradient?

4.

The revised HIP does not include ongoing monitoring down gradient from the interceptor trench to evaluate the effectiveness of the trench system. EPA General Comment 4 in the November

14, 2000, letter requests that the plan define methods for evaluating the effectiveness of the current trench system in capturing all groundwater flow toward the landfill tributary or Dick's Creek and preventing PCB discharges to the environment. The plan should be further revised to provide quantitative information on the effectiveness of the interceptor trench system. Specifically, the plan should include analytical results for groundwater samples collected down gradient from the system and up gradient from the surface water bodies.

5. The figures depicting groundwater flow, particularly those for the perched zone, do not depict flow in various hydrogeologic units north and west of the slag processing area. EPA Specific Comment 6 in the November 14, 2000, letter requests delineation of groundwater flow in these units. The plan should be further revised to depict flow in these units or to provide a rationale for not doing so. It is recommended that at least 2 well clusters should be installed between Dick's Creek and the closed solid waste management unit east of Monroe Ditch. Additional monitoring wells should also be installed both north and south of GM-36W, and 2 additional wells should be installed both north and south of Monroe Ditch west of GM-45S.
6. The revised HIP does not explicitly outline a method for determining the transport mechanisms for PCB migration in groundwater. EPA General Comment 11 in the November 14, 2000, letter requests that the plan propose a method for characterizing the PCB transport mechanisms within each hydrogeologic unit. The plan does state that filtered and unfiltered samples will be collected using low-flow techniques, but it discusses only metal analysis and does not address the requested sampling and analytical techniques for PCBs. The plan should be revised to present a method for determining the transport mechanisms for PCB migration.
7. The revised HIP does not adequately address EPA's November 14, 2000, comments regarding depths of and techniques for installation of new monitoring wells (see EPA Specific Comments 14, 15, 17, 18, and 22), as the revised HIP does not include any additional monitoring wells. Applicable portions of EPA's comments should be addressed in the event that additional monitoring wells are required.
8. Many of EPA's November 14, 2000, comments are not specifically addressed; rather, portions of the text cited in these comments appear to have been deleted from the plan. Sections have been added, deleted, and renumbered in the revised HIP. Review of the plan would be facilitated by (1) a list of EPA's comment numbers with summaries of AK Steel's responses to the comments and (2) a summary table providing the EPA comment numbers and the specific locations in the plan where the comments are addressed.

SPECIFIC COMMENTS

1. Section 2.1, Page 4, Paragraph 2. This paragraph states that the interceptor trench and lateral operate effectively. This statement appears to be based in part on visual observations, as current monitoring includes only sampling of the groundwater collected in the trench and lateral. As discussed in General Comment 4 herein and in EPA General Comment 2 in the November 14, 2000, letter, the plan should include provisions for monitoring the effectiveness of the trench system in intercepting all groundwater flow. The plan indicates that groundwater flow in the OMS operations area will continue to be monitored, but it does not specifically state that groundwater flow to Monroe Ditch will continue to be monitored and does not provide for collection of samples along the stream bank to demonstrate that contaminated flow is not bypassing the system. The plan should be revised to include (1) a strategy for monitoring

groundwater flow to Monroe Ditch and (2) collection of samples to demonstrate that the system is intercepting flow.

2.

perched
concept
model

Section 2.6.3, Pages 16 and 17. This section discusses the conceptual model of perched-zone groundwater flow converging in the area of the interceptor system. Ultimately, the conceptual model of groundwater flow presented in the plan will serve as the working hypothesis for the hydrogeologic investigation. However, review of the data in Figures 4, 12, 13, and 14 reveals apparent inconsistencies that do not support the conceptual model. The plan should be further revised to address these apparent inconsistencies (see Specific Comment 7 herein). Moreover, the conceptual model should be re-evaluated based on these apparent inconsistencies and revised as necessary.

3.

trench
efficiency

Section 2.6.3, Page 17, Paragraph 3. This paragraph states that groundwater flow in the perched zone is collected by the interceptor trench and lateral. As previously discussed, the AOC requires that the effectiveness of the trench system be demonstrated, but no specific procedures for doing so are included in the revised HIP. The plan should be further revised to (1) provide for collection of samples along the bank of Monroe Ditch and (2) discuss the on-going collection of sediment and surface water samples in Monroe Ditch in order to demonstrate that contaminated groundwater is not bypassing the system.

4.

monit.
network

Sections 3.1, Page 21, and 3.3, Page 21, Paragraph 2. The 22 wells identified in Table 2 are proposed for additional monitoring and sampling as part of the plan. In referring to Table 2, well MDA26S could not be located on the Figures, only MDA26P. Please clarify. Also, it is unclear why well MDA02S should not be included in the group of wells to be monitored and sampled. EPA has not agreed that Mill Scale Area 1 is not a possible source area for PCBs. Therefore, well MDA02S should be included in the monitoring and sampling scheme. Looking further at wells excluded from monitoring and sampling, it is noted that both wells MDA22P and MDA 24P were excluded. Both these wells should be added into the monitoring/sampling network.

5.

slug
tests

Section 3.5, Page 22. This section discusses methods to determine the permeability of the aquifer materials but does not fully address EPA Specific Comment 22 in the November 14, 2000, letter. The plan states that slug tests will be performed on wells MDA03P, MDA08S, MDA15S, and MDA25P to determine the permeability of the aquifer material in which each well is set. However, the plan does not specify the slug test and associated data interpretation methodologies to be used. The plan should be further revised or a standard operating procedure (SOP) should be included to specify how the slug tests will be performed and how the slug test data will be interpreted.

6.

[PCB]

Figure 5. This figure depicts the PCB distribution in the upper aquifer. No data values are depicted adjacent to the monitoring points. Data values should be depicted in the figure; if all values were non-detects, "ND" labels should be added as stated in the figure legend.

7.

x-section
w/ flow
lines

Figures 6, 8, 9, and 11. These figures depict cross section locations and the geologic cross sections themselves. However, the cross section lines do not extend to Dick's Creek. EPA General Comment 2 in the November 14, 2000, letter requests a cross section that extends through the northern portion of the slag processing area to Dick's Creek. The figures should be revised to provide the information requested. + including

8.

+ supporting
evidence
to draw
them

Figures 12, 13, and 14. These figures depict groundwater flow in the perched zone on various

dates. Several omissions and inconsistencies noted on these figures should be addressed as discussed below.

- In each figure, the legend contains a reference to the "Elevation Contour" (red contour) but is unclear as to what surface is being referred to. Presumably, the surface is the top of the clay that underlies the perched zone. The legend entry should be clarified.
- In each figure, the legend contains an arrow that should be used to depict groundwater flow direction. However, the flow direction is not indicated using the arrow defined in the legend in the flow diagrams. The flow direction or directions should be shown in each figure using the defined arrow.
- Complex piezometric flow patterns are depicted in the figures, including many abrupt changes in direction. However, at several perched-zone monitoring locations near the points where these abrupt changes are depicted, no piezometric data are included (MDA22P in Figures 13 and 14 and at MDA24P in Figures 12, 13, and 14). For this reason, it is unclear whether data were not collected at these points or data for these points were omitted based on some rationale. The figures should be revised to depict all available perched-zone piezometric data, and the rationale for exclusion of any data should be provided.
- The figures do not depict the clay surface and the groundwater flow conditions in much of the area north of the railroad. EPA General Comment 2 in the November 14, 2000, letter requests a map of the surface of the clay unit in the northern portion of the slag processing area with contours extending to Dick's Creek. Previous sections of the revised HIP state that a southeast- to northwest-trending topographic high on the surface of the clay prevents northward flow in the perched zone. However, the clay surface contours do not clearly depict such a divide, as they do not extend far enough to the north. Clay surface elevations, piezometric data, and groundwater flow data (where applicable) should be shown for this area, including data obtained at the three new monitoring wells installed in the northern part of the area pursuant to the AOC. The contours depicted should clearly demonstrate that a groundwater flow boundary exists in the perched zone as described in the text.
- Section 2.6.3 of the revised HIP states that the slope of the underlying clay surface controls flow in the perched zone. However, depictions of groundwater flow directions in the figures appear to be inconsistent with the clay surface elevation data shown. For example, flow in the vicinity of well MDA22P is depicted as upslope (northward) on the clay, which slopes steeply to the southwest, and at its east end, the 650-foot contour turns abruptly toward the reported topographic high that AK Steel claims is a boundary to flow in the perched zone. Furthermore, the contaminant distribution map for the perched zone in Figure 4 does not appear to be consistent with the flow patterns depicted in Figures 12, 13, and 14, as these patterns converge toward the interceptor trench. Concentrations of PCBs in the area between the suspected former source areas and the former seep location are depicted as either low or non-detects. As depicted in Drawing No. 4, boreholes BH04 and BH06, located along the drainage pathway, were dry. These results are inconsistent with the overall conceptual model of converging flow in the vicinity of the former seep location and interceptor trench. The figures' depictions of groundwater flow should be re-evaluated and modified as necessary. Also, explanations

X

clay surface

make consistent
+ provide data used
so base revisions upon

of the apparent inconsistencies discussed in this comment should be provided in the text of the plan.

9. **Figures 15, 16, and 17.** These figures depict groundwater flow in the upper aquifer in March 1999, April 2000 and September 2000, respectively. The data presented appear insufficient to support the upper aquifer's piezometric surface depicted on the figures, which suggest flow converging from the east and west along Monroe Ditch; abrupt inflection points in the contours; and steep hydraulic gradients given the type of aquifer materials (sand and gravel). Specific examples of omissions or inconsistencies noted include:

- The flow diagrams for the upper aquifer do not include flow direction indicators in either the legend or on the map. Arrows depicting the flow direction should be added, consistent with Figures 12, 13, and 14.
- The figures depict several wells for which no piezometric data are shown. For example Figure 16 does not present data for wells MDA14S, MDA15S, MDA16S, MDA17S, or MDA36S. Figure 15 does not include piezometric elevation data for well MDA36S. Figure 17 does not include data for wells MDA16S or MDA26S. While the text indicates that wells MDA26S, MDA27S, and MDA28S were not installed until 2000, no rationale for the exclusion of the MDA26S data in September 2000 (Figure 17) or the exclusion of the other data points is presented in the HIP. It is unclear if data were not collected at these points, or if these points were omitted while generating the contours due to other rationale. The map symbols and legend should clearly indicate if data were not collected from any wells shown on the figure, with explanatory annotations (for example "NI" for "not yet installed", or "NA" for "not accessible"). All elevation data collected on each day should be presented on the figures; rationale for exclusion of any data points during the contouring process should be thoroughly supported and presented in the HIP.
- Piezometric elevation data presented for well MDA03S on Figures 15, 16, 17 are consistently higher than the elevations reported for monitoring well MDA08S. However, the contours as drawn generally suggest converging and northward flow in the shallow aquifer in this area. Although not readily apparent due to the large contour intervals depicted, the piezometric elevations measured in well MDA03S are inconsistent with the prevailing gradient depicted on the figures. No explanation for this inconsistency is provided in the HIP. Furthermore, on Figures 15 and 17 the 640-foot elevation contour is depicted on the apparent upgradient side of well MDA03S; however, the elevations reported for well MDA03S are higher than 640 feet. The figures should be revised to depict accurate placement of piezometric contours based on all of the available data and to accurately reflect piezometric contours in the vicinity of this well. Reasons for the anomalously high groundwater elevation at well MDA03S, as well as potential ramifications on the interpreted flow direction, should be discussed in the HIP text.
- The piezometric contour intervals depicted (5 or 10 feet, depending on the date) and the absence of contours in the depicted downgradient direction from well MDA03S oversimplify the complexity of the piezometric surface. Depictions of flow should be reevaluated and verified using all available data. After addition of any other available data requested in prior bullets of this comment, the figures should be revised to (1) depict the piezometric surface using a smaller contour interval, small enough to allow

yes.

depiction of the aforementioned conditions in the vicinity of well MDA03S and (2) extend the contours as far downgradient as allowed by the available data.

10. **Appendix A, GW-SOP-5, Page A-8, Item 8.** This SOP states that well development using a hand bailer will be considered complete if three to five well volumes of groundwater have been removed from the well; pH, specific conductance, turbidity, and temperature readings have stabilized; or both. However, EPA Specific Comment 25 in the November 14, 2000, letter indicates that proper well development may require removal of significantly more groundwater under some circumstances. An Ohio Environmental Protection Agency (OEPA) Division of Drinking and Ground Waters technical guidance dated 1995 specifies that well development should continue until pH, temperature, and specific conductance readings are within ± 10 percent for at least three successive well volumes and until the turbidity reading is below 5 nephelometric turbidity units. This technical guidance also states that if these conditions are not achieved, well development may stop after (1) at least 10 well volumes have been removed, (2) several development procedures have been attempted, and (3) proper well construction has been verified. The SOP should be revised to make the well development discussion consistent with the OEPA technical guidance.
11. **Appendix A, GW-SOP-9, Page A-16.** EPA Specific Comment 8 in the November 14, 2000, letter requests that this SOP be modified to discuss sample collection techniques that could be used to aid in determining PCB transport mechanisms. The SOP does not adequately address this comment. The SOP should be revised to include a strategy for sample collection in order to determine the transport mechanisms for PCBs. Furthermore, the text in Section 3.3, on Page 21 of the revised HIP indicates that samples will be collected for metal analysis using low-flow techniques and that filtered and unfiltered samples will be collected. The SOP should be revised to make it consistent with the sample collection procedures discussed in the text.
12. **Appendix A, GW-SOP-10, Pages A-18 and A-19.** This SOP addresses low-flow sampling techniques. However, the SOP does not specify the type of pump to be used. Item 6 states that dedicated tubing will be suspended in each well, implying that the type of pump to be used may be something other than a submersible pump or a gas-lift bladder pump. Because of the potential for aeration of samples, other types of pumps, such as peristaltic pumps, should not be used (see OEPA's 1995 technical guide). The SOP should be revised to specify that low-flow purging and sampling will be conducted using only submersible or bladder pumps.



Tetra Tech EM Inc.

200 E. Randolph Drive, Suite 4700 ♦ Chicago, IL 60601 ♦ (312) 856-8700 ♦ FAX (312) 938-0118

January 19, 2001

Mr. Allen Wojtas
Work Assignment Manager
Enforcement and Compliance Assurance Branch
Waste, Pesticides and Toxics Division (DE-9J)
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604

**Subject: Technical Review Comments on Draft
"Hydrogeologic Investigation Plan, Revision 1"
AK Steel Corporation, Olympic Mills Service Operations Area
EPA Contract No. 68-W9-9018, Work Assignment No. R0580524**

Dear Mr. Wojtas:

On December 14, 2001, AK Steel Corporation (AK Steel) submitted the draft "Hydrogeological Investigation Plan, Revision 1" (revised HIP) to the U.S. Environmental Protection Agency (EPA) pursuant to the requirements of Section F of AK Steel's administrative order on consent (AOC) with EPA dated August 17, 2000. The revised HIP was prepared by ARCADIS Geraghty & Miller, Inc., on behalf of AK Steel.

In a technical direction memorandum dated November 21, 2000, that was issued under EPA Contract No. 68-W9-9018, Work Assignment No. R0580524, EPA tasked Tetra Tech EM Inc. (Tetra Tech) to prepare technical review comments on the revised HIP. Tetra Tech received a copy of the revised HIP on December 16, 2000, and was authorized by EPA to proceed with its review on December 20, 2000.

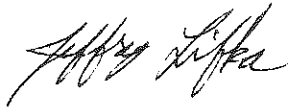
Tetra Tech reviewed the revised HIP to assess (1) its general technical adequacy; (2) its consistency with the technical objectives specified in the AOC; and (3) to evaluate whether EPA's November 14, 2000, comments on Revision 0 of the plan were adequately addressed. Tetra Tech identified issues that are discussed in the enclosed technical review comments.

AK5 043432

Mr. Allen Wojtas
January 19, 2001
Page 2

If you have any questions regarding this submittal, please contact me at (312) 946-6491 or Eric Morton at (312) 856-8797.

Sincerely,



Jeffrey Lifka
Acting Project Manager

Enclosure

cc: Bernie Orenstein, EPA Regional Project Officer (letter only)
Gary Cygan, EPA Technical Contact and Project Manager
Michael Mikulka, EPA Technical Advisor
Eric Morton, Tetra Tech Site Manager
Ed Schuessler, Tetra Tech Regional Manager (letter only)
Art Glazer, Tetra Tech Program Manager

AK5 043433

ENCLOSURE

**TECHNICAL REVIEW COMMENTS ON
DRAFT "HYDROGEOLOGIC INVESTIGATION PLAN, REVISION 1"
AK STEEL CORPORATION, OLYMPIC MILLS SERVICE OPERATIONS AREA**

(Six Pages)

AK5 043434

**TECHNICAL REVIEW COMMENTS ON
DRAFT "HYDROGEOLOGIC INVESTIGATION PLAN - REVISION 1"
AK STEEL CORPORATION, OLYMPIC MILLS SERVICE OPERATIONS AREA**

Under Contract No. 68-W9-9018, Work Assignment No. R0580524, Tetra Tech EM Inc. (Tetra Tech) technically reviewed the draft "Hydrogeologic Investigation Plan, Revision 1" (revised HIP) for the Olympic Mills Service, Inc. (OMS) Operations area at the AK Steel Corporation (AK Steel) facility in Middletown, Ohio. The revised HIP was submitted to the U.S. Environmental Protection Agency (EPA) pursuant to the requirements of Section F of AK Steel's administrative order on consent (AOC) with EPA dated August 17, 2000. The plan was prepared by ARCADIS Geraghty & Miller, Inc. (ARCADIS), on behalf of AK Steel.

Tetra Tech reviewed the revised HIP to assess (1) its general technical adequacy; (2) its consistency with the technical objectives specified in the AOC; and (3) whether EPA's November 14, 2000, comments on Revision 0 of the plan were adequately addressed. Tetra Tech identified issues that are discussed in the following general and specific review comments.

GENERAL COMMENTS

1. The revised HIP does not adequately address EPA's comments of November 14, 2000. In some instances, comments are not addressed, and no supporting rationale is provided. In other instances, comments are only partially addressed, and requested justifications are often inadequate. The plan should be further revised to provide additional clarification of several issues cited in EPA's November 14, 2000, comment letter. Some of the issues that still require clarification involve (1) elimination of contaminated groundwater seepage to surface waters, (2) prevention of discharges that violate state water quality standards, (3) monitoring the effectiveness of the current interceptor trench system, and (4) delineation of high-pH groundwater in the vicinity of the slag processing area as required by Paragraph 146 of the AOC.
2. The revised HIP fails to include installation of a deep monitoring well at location GM-35S and additional sampling of deep monitoring wells. EPA General Comment 10 in the November 14, 2000, letter calls for (1) additional sampling of deep monitoring wells in the slag processing area and (2) installation of a deep monitoring well in the vicinity of location GM-35S (south of the boneyard) with subsequent sampling for polychlorinated biphenyl (PCB) and polynuclear aromatic hydrocarbon (PAH) analyses. The plan presents a rationale for not installing additional wells in the northern and central portions of the slag processing area but provides no rationale for not installing a deep well in the southern part of the area. The plan only states that there is no evidence of northward migration of PCBs and that no apparent pathways exist for PCB migration to Dick's Creek from the potential source areas of the Former Drainage Swale and Mill Scale Area.
3. However, the purpose of installing a deep well in the southern part of the area is to evaluate the

vertical extent of contamination at a location where contamination has been detected in shallow (overlying) zones. The plan should be further revised to include installation of this well as requested by EPA. The plan should also be revised to include the additional deep well sampling and analyses for the slag processing area.

3. Several of EPA's November 14, 2000, comments, including General Comments 6 and 10 and Specific Comments 13, 14 and 15, call for installation of additional monitoring wells in the northern and central parts of the OMS operations area. The revised HIP does not include installation of additional wells and does not provide adequate rationale for not installing additional wells. The revised HIP only states that there is no need for additional wells because the site hydrogeology and groundwater flow patterns are adequately understood and are monitored by the existing well network. If AK Steel maintains its position that additional perched-zone wells are not required, this position should be clearly supported by evidence that sufficient data exist and have been correctly interpreted to provide a reasonable degree of confidence that the contaminant source areas and migration pathways have been adequately characterized. However, Tetra Tech's review of the revised HIP revealed several apparent inconsistencies among the interpretations of geologic, piezometric, and contaminant distribution data. In some instances, key supporting data are not provided in the revised HIP's text or figures.

The plan should be further revised to include a sufficient rationale for the proposed numbers and locations of wells that will comprise the final monitoring network. Specifically, the plan should be revised to include the information discussed below.

- Figures depicting groundwater flow, contaminant distribution, and clay surface elevation data should be reviewed and modified as necessary to include data that appear to have been inadvertently omitted. For example, Figure 5 is missing PCB concentrations, Figure 12 is missing groundwater elevation data for well MDA24P, Figures 13 and 14 are missing groundwater elevation data for wells MDA22P and MDA24P, and Figures 12 through 14 are missing clay elevation contours extending to the north and northeast.
- The perched-zone groundwater flow patterns depicted in the figures are complex, and in some instances, distinct changes in flow direction are shown adjacent to monitoring points that lack data values. The figures should include piezometric elevation measurements for all wells. If particular data were not used to develop the contours, a rationale for this approach should be provided.
- Boring logs for the three new wells installed in September 2000 should be provided in the plan.
- The figures should be modified to include clay surface elevations and, where applicable, perched-zone groundwater elevations in the area between the rail line and Dick's Creek.
- In some figures, the groundwater flow direction in the perched zone appears to be inconsistent with the surface elevation map for the underlying clay and the contaminant distribution pattern in the perched zone. Interpretations of groundwater flow direction should be reviewed and modified as necessary. For example, in Figure 4, groundwater is depicted as flowing generally toward the interceptor trench. The plan indicates that PCBs have been detected in water in the trench. However, the PCB values shown in Figure 4

for the wells nearest to the trench are nondetects. Also, in Figures 12 through 14, the northern portion of the 650-foot contour indicates that groundwater is flowing upslope. These inconsistencies should be resolved.

4. The revised HIP does not include ongoing monitoring downgradient from the interceptor trench to evaluate the effectiveness of the trench system. EPA General Comment 4 in the November 14, 2000, letter requests that the plan define methods for evaluating the effectiveness of the current trench system in capturing all groundwater flow toward the landfill tributary or Dick's Creek and preventing PCB discharges to the environment. The plan should be further revised to provide quantitative information on the effectiveness of the interceptor trench system. Specifically, the plan should include analytical results for groundwater samples collected downgradient from the system and upgradient from the surface water bodies.
5. The figures depicting groundwater flow, particularly those for the perched zone, do not depict flow in various hydrogeologic units north and west of the slag processing area. EPA Specific Comment 6 in the November 14, 2000, letter requests delineation of groundwater flow in these units. The plan should be further revised to depict flow in these units or to provide a rationale for not doing so.
6. The revised HIP does not explicitly outline a method for determining the transport mechanisms for PCB migration in groundwater. EPA General Comment 11 in the November 14, 2000, letter requests that the plan propose a method for characterizing the PCB transport mechanisms within each hydrogeologic unit. The plan does state that filtered and unfiltered samples will be collected using low-flow techniques, but it discusses only metal analysis and does not address the requested sampling and analytical techniques for PCBs. The plan should be revised to present a method for determining the transport mechanisms for PCB migration.
7. The revised HIP does not adequately address EPA's November 14, 2000, comments regarding depths of and techniques for installation of new monitoring wells (see EPA Specific Comments 14, 15, 17, 18, and 22), as the revised HIP does not include any additional monitoring wells. Applicable portions of EPA's comments should be addressed in the event that additional monitoring wells are required.
8. Many of EPA's November 14, 2000, comments are not specifically addressed; rather, portions of the text cited in these comments appear to have been deleted from the plan. Sections have been added, deleted, and renumbered in the revised HIP. Review of the plan would be facilitated by (1) a list of EPA's comment numbers with summaries of AK Steel's responses to the comments and (2) a summary table providing the EPA comment numbers and the specific locations in the plan where the comments are addressed.

SPECIFIC COMMENTS

1. **Section 2.1, Page 4, Paragraph 2.** This paragraph states that the interceptor trench and lateral operate effectively. This statement appears to be based in part on visual observations, as current monitoring includes only sampling of the groundwater collected in the trench and lateral. As discussed in General Comment 4 herein and in EPA General Comment 2 in the November 14, 2000, letter, the plan should include provisions for monitoring the effectiveness of the trench system in intercepting all groundwater flow. The plan indicates that groundwater flow in the OMS

operations area will continue to be monitored, but it does not specifically state that groundwater flow to Monroe Ditch will continue to be monitored and does not provide for collection of samples along the stream bank to demonstrate that contaminated flow is not bypassing the system. The plan should be revised to include (1) a strategy for monitoring groundwater flow to Monroe Ditch and (2) collection of samples to demonstrate that the system is intercepting flow.

2. **Section 2.6.3, Pages 16 and 17.** This section discusses the conceptual model of perched-zone groundwater flow converging in the area of the interceptor system. Ultimately, the conceptual model of groundwater flow presented in the plan will serve as the working hypothesis for the hydrogeologic investigation. However, review of the data in Figures 4, 12, 13, and 14 reveals apparent inconsistencies that do not support the conceptual model. The plan should be further revised to address these apparent inconsistencies (see Specific Comment 7 herein). Moreover, the conceptual model should be re-evaluated based on these apparent inconsistencies and revised as necessary.
3. **Section 2.6.3, Page 17, Paragraph 3.** This paragraph states that groundwater flow in the perched zone is collected by the interceptor trench and lateral. As previously discussed, the AOC requires that the effectiveness of the trench system be demonstrated, but no specific procedures for doing so are included in the revised HIP. The plan should be further revised to (1) provide for collection of samples along the bank of Monroe Ditch and (2) discuss the on-going collection of sediment and surface water samples in Monroe Ditch in order to demonstrate that contaminated groundwater is not bypassing the system.
4. **Section 3.5, Page 22.** This section discusses methods to determine the permeability of the aquifer materials but does not fully address EPA Specific Comment 22 in the November 14, 2000, letter. The plan states that slug tests will be performed on wells MDA03P, MDA08S, MDA15S, and MDA25P to determine the permeability of the aquifer material in which each well is set. However, the plan does not specify the slug test and associated data interpretation methodologies to be used. The plan should be further revised or a standard operating procedure (SOP) should be included to specify how the slug tests will be performed and how the slug test data will be interpreted.
5. **Figure 5.** This figure depicts the PCB distribution in the upper aquifer. No data values are depicted adjacent to the monitoring points. Data values should be depicted in the figure; if all values were nondetects, "ND" labels should be added as stated in the figure legend.
6. **Figures 6, 8, 9, and 11.** These figures depict cross section locations and the geologic cross sections themselves. However, the cross section lines do not extend to Dick's Creek. EPA General Comment 2 in the November 14, 2000, letter requests a cross section that extends through the northern portion of the slag processing area to Dick's Creek. The figures should be revised to provide the information requested.
7. **Figures 12, 13, and 14.** These figures depict groundwater flow in the perched zone on various dates. Several omissions and inconsistencies noted on these figures should be addressed as discussed below.
 - In each figure, the legend contains a reference to the "Elevation Contour" (red contour) but is unclear as to what surface is being referred to. Presumably, the surface is the top of

the clay that underlies the perched zone. The legend entry should be clarified.

- In each figure, the legend contains an arrow that should be used to depict groundwater flow direction. However, the flow direction is not indicated using the arrow defined in the legend in the flow diagrams. The flow direction or directions should be shown in each figure using the defined arrow.
- Complex piezometric flow patterns are depicted in the figures, including many abrupt changes in direction. However, at several perched-zone monitoring locations near the points where these abrupt changes are depicted, no piezometric data are included (MDA22P in Figures 13 and 14 and at MDA24P in Figures 12, 13, and 14). For this reason, it is unclear whether data were not collected at these points or data for these points were omitted based on some rationale. The figures should be revised to depict all available perched-zone piezometric data, and the rationale for exclusion of any data should be provided.
- The figures do not depict the clay surface and the groundwater flow conditions in much of the area north of the railroad. EPA General Comment 2 in the November 14, 2000, letter requests a map of the surface of the clay unit in the northern portion of the slag processing area with contours extending to Dick's Creek. Previous sections of the revised HIP state that a southeast- to northwest-trending topographic high on the surface of the clay prevents northward flow in the perched zone. However, the clay surface contours do not clearly depict such a divide, as they do not extend far enough to the north. Clay surface elevations, piezometric data, and groundwater flow data (where applicable) should be shown for this area, including data obtained at the three new monitoring wells installed in the northern part of the area pursuant to the AOC. The contours depicted should clearly demonstrate that a groundwater flow boundary exists in the perched zone as described in the text.
- Section 2.6.3 of the revised HIP states that the slope of the underlying clay surface controls flow in the perched zone. However, depictions of groundwater flow directions in the figures appear to be inconsistent with the clay surface elevation data shown. For example, flow in the vicinity of well MDA22P is depicted as upslope (northward) on the clay, which slopes steeply to the southwest, and at its east end, the 650-foot contour turns abruptly toward the reported topographic high that AK Steel claims is a boundary to flow in the perched zone. Furthermore, the contaminant distribution map for the perched zone in Figure 4 does not appear to be consistent with the flow patterns depicted in Figures 12, 13, and 14, as these patterns converge toward the interceptor trench. Concentrations of PCBs in the area between the suspected former source areas and the former seep location are depicted as either low or nondetects. As depicted in Drawing No. 4, boreholes BH04 and BH06, located along the drainage pathway, were dry. These results are inconsistent with the overall conceptual model of converging flow in the vicinity of the former seep location and interceptor trench. The figures' depictions of groundwater flow should be re-evaluated and modified as necessary. Also, explanations of the apparent inconsistencies discussed in this comment should be provided in the text of the plan.

8. **Figures 15, 16, and 17.** The groundwater flow diagrams for the upper aquifer shown in these figures do not include groundwater flow direction indicators. Arrows depicting the flow direction

or directions should be added to the flow diagrams and legends in the figures.

9. **Appendix A, GW-SOP-5, Page A-8, Item 8.** This SOP states that well development using a hand bailer will be considered complete if three to five well volumes of groundwater have been removed from the well; pH, specific conductance, turbidity, and temperature readings have stabilized; or both. However, EPA Specific Comment 25 in the November 14, 2000, letter indicates that proper well development may require removal of significantly more groundwater under some circumstances. An Ohio Environmental Protection Agency (OEPA) Division of Drinking and Ground Waters technical guidance dated 1995 specifies that well development should continue until pH, temperature, and specific conductance readings are within ± 10 percent for at least three successive well volumes and until the turbidity reading is below 5 nephelometric turbidity units. This technical guidance also states that if these conditions are not achieved, well development may stop after (1) at least 10 well volumes have been removed, (2) several development procedures have been attempted, and (3) proper well construction has been verified. The SOP should be revised to make the well development discussion consistent with the OEPA technical guidance.
10. **Appendix A, GW-SOP-9, Page A-16.** EPA Specific Comment 8 in the November 14, 2000, letter requests that this SOP be modified to discuss sample collection techniques that could be used to aid in determining PCB transport mechanisms. The SOP does not adequately address this comment. The SOP should be revised to include a strategy for sample collection in order to determine the transport mechanisms for PCBs. Furthermore, the text in Section 3.3, on Page 21 of the revised HIP indicates that samples will be collected for metal analysis using low-flow techniques and that filtered and unfiltered samples will be collected. The SOP should be revised to make it consistent with the sample collection procedures discussed in the text.
11. **Appendix A, GW-SOP-10, Pages A-18 and A-19.** This SOP addresses low-flow sampling techniques. However, the SOP does not specify the type of pump to be used. Item 6 states that dedicated tubing will be suspended in each well, implying that the type of pump to be used may be something other than a submersible pump or a gas-lift bladder pump. Because of the potential for aeration of samples, other types of pumps, such as peristaltic pumps, should not be used (see OEPA's 1995 technical guide). The SOP should be revised to specify that low-flow purging and sampling will be conducted using only submersible or bladder pumps.

GENERAL COMMENTS

1. The revisions to the SGIP and AK Steel's responses do not adequately address EPA comments (dated January 10, 2001) on the revised Soil Investigation Plan (SIP) or EPA's comments on the revised Hydrogeologic Investigation Plan (HIP) (dated February 8, 2001). In several instances, comments are only partially addressed and requested justifications are often inadequate. In other instances, the responses to the deficiency or comment and modification of the SGIP are technically deficient or inconsistent with applicable guidance. The SGIP should be further revised to provide additional clarification of several issues cited in EPA's comment letters of January 10, 2001 and February 8, 2001. *include* The following general issues require additional clarification: (1) delineation of potential polychlorinated biphenyl (PCB) source areas, (2) characterization of PCBs in soils, (3) identification of preferential flow pathways from potential PCB source areas, and (4) interpretation and depiction of groundwater flow patterns in the perched and upper aquifers.
2. AK Steel's responses to EPA's comments and deficiencies are provided in Appendices A and B of the SGIP. In several instances, information in AK Steel's responses is inconsistent with information in the SGIP. For example, proposed HSA boring installation activities in the response to "EPA Deficiency 6a" (which requires additional borings in the vicinity of Mill Scale Area 3) do not correspond to the proposed activities in Section 4.4 of the SGIP. AK Steel's response to "EPA Deficiency 6a" proposes two additional hollow-stem auger (HSA) borings, one north of BH07 and one southwest of BH07-S50. However, Section 4.4 of the SGIP specifies two HSA borings immediately west of Mill Scale Area 3, one north and one southwest of BH07-S50. Furthermore, in some instances, EPA deficiencies are not addressed in AK Steel's responses or through revisions to the SGIP.

The following general revisions to the SGIP are suggested:

- HSA locations*
- ★ • The SGIP should include a figure showing all proposed hollow-stem auger borings, hand auger borings, and perched and upper aquifer monitoring wells.
 - The SGIP should be revised to ensure consistency between proposed activities in responses to EPA comments and activities proposed in the SGIP.
 - The rationale for declining to adopt recommendations in EPA comments should be clearly stated in the SGIP.

3. The responses in Appendices A and B to EPA's comments, in several instances, do not adequately address EPA's requests for additional borings, monitoring wells, or chemical analyses. The following are examples of instances where the SGIP or responses to EPA deficiencies and comments do not address EPA recommendations:

TT Hypo Comments

- Borings proposed in the SGIP for Mill Scale Area 3 include two HSA borings; however, EPA Deficiency 6a recommends installation of four HSA borings in this area.
- The SGIP proposes no additional boring locations in the vicinity of BH08. However, EPA Deficiency 6b recommends three additional borings west, north, and south of BH08, at a distance of 25 feet from the boring, to sufficiently evaluate the extent of PCB contamination adjacent to this location.
- EPA Deficiency 6c states that further investigation is warranted west and north of borings BH13 and BH13-S50. The SGIP does not propose additional borings in this area due to complications from ongoing OMS operations.
- EPA Deficiency 8 requests collection of samples for analysis from depths of
- 0-2 feet, 2-4 feet, 4-6 feet and 6-8 feet in a radius of 10 to 25 feet around location SS01. AK Steel's response states that no additional borings are necessary in the vicinity of SS01 because historic data have already delineated the extent of PCB contamination at this location. The rationale presented is insufficient to negate the possibility of further investigations in this area.

The SGIP should be revised to completely address all deficiencies/comments presented in EPA's January 10 and February 8, 2001, comment letters by specifying appropriate activities and procedures to collect the requested data. If AK Steel is contesting the need to conduct requested activities, sufficient supporting technical rationale and existing data must be presented in the SGIP or responses to negate the need for such activities.

4. Several of EPA's February 8, 2001, comments requests review and modification, as necessary, of figures depicting groundwater flow directions, contaminant distribution in the perched zone, and elevation of the surface of the clay. Based on inspection of the revised draft SGIP, AK Steel did review and modify these figures; however, several omissions or inconsistencies still exist. Specific examples include the following:

- Figures depicting piezometric data and groundwater flow directions in the perched zone continue to depict groundwater contours that are drawn incorrectly based on the data shown for the perched-zone monitoring wells. It appears that groundwater flow interpretations have been erroneously modified to be consistent with the clay surface elevation contours and in some cases are clearly incorrect. These figures should be reviewed and modified as necessary.
- Inconsistencies are apparent among figures depicting the elevation of the clay surface. In some cases, elevation contours are missing. These figures should be reviewed and modified, as necessary, for consistency and to

✓ gw flow dir. ★

include all clay surface elevation contours.

SPECIFIC COMMENTS

1. **Section 4.4, Page 36, Paragraph 0.** The third bullet item proposes two HSA borings immediately west of Mill Scale Area 3: one to the north and one southwest of BH07-S50. EPA Deficiency 6a from the January 10, 2001, letter recommends four HSA borings in the vicinity of Mill Scale Area 3. EPA recommends that these four HSA borings be located 25 feet north, west, and south of BH07 and 25 feet west of boring BH07-S50. AK Steel's response to EPA Deficiency 6a states that three borings were completed in September 2000 at locations east, south, and west of BH07 at a distance of 50 feet and one boring was 25 feet to the southeast of BH07-S50, for a total of four borings. The response proposes two additional HSA borings, one north of BH07 and one southwest of BH07-S50. The numbers and locations of HSA borings proposed in the response do not correspond to the proposed activities in Section 4.4 of the SGIP. Neither proposal identified in the SGIP or the responses satisfies the recommendation in EPA Deficiency 6a. The SGIP and response to Deficiency 6a should be made consistent with EPA's recommendations.
boring locations
2. **Section 4.4, Page 36, Paragraph 0.** The fourth bullet item proposes three HSA borings immediately north of the Former Oil Separation Ponds; one each to the west, northwest, and northeast of BH15. EPA Deficiency 7a requires three borings located (1) 25 feet north of BH15-N50, (2) 25 feet west of BH15-N50, and (3) 25 feet south of BH15-W50. AK Steel's response to Deficiency 7a proposes three additional borings in the vicinity of BH15-N50 and BH15-W50, but also states that access to the locations suggested by EPA Deficiency 7a may be impossible. The response also states that actual boring locations will be selected in the field in conjunction with EPA oversight and OMS safety personnel. The information in the bullet is inconsistent with AK Steel's response to Deficiency 7a and the boring locations requested by EPA. The SGIP should be modified to be consistent with AK Steel's response to and the boring locations requested in EPA Deficiency 7a.
boring loc. near oil sep ponds
3. **Section 4.4, Page 36, Paragraph 0.** The second bullet item proposes completing two hand auger borings at the "head" of the former drainage path in the low area southwest of the former oil separator ponds, but does not indicate exactly where the head of the drainage path is located. AK Steel's response to EPA Deficiency 8 states that two hand auger borings will be installed in the marshy area south of the former oil separation ponds, at the eastern end of the former drainage path. Figures provided with the SGIP do not identify the eastern extent of the former drainage path. Due to the ambiguity regarding the boundaries of the former drainage path, it is unclear exactly where the hand auger borings will be located. The SGIP should be modified to clearly identify the boring locations. Information in AK Steel's responses and in the SGIP should also be reviewed and revised for consistency.
hand augering of oil sep drainage

Furthermore, EPA Deficiency 8 requests collection of samples for analysis from depths of 0-2 feet, 2-4 feet, 4-6 feet and 6-8 feet in a radius of 10 to 25 feet around location SS01.
[P&B] invest

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AK Steel's response to this request states that no additional borings need to be installed in the vicinity of SS01 because historic data have already delineated the extent of PCB contamination at this location. However, EPA notes in Deficiency 8 that at location SS01-S14, the boring located furthest south in this location, PCBs were detected in soil samples at a concentration of 30 parts per million (ppm) at a depth of 3 feet. The SGIP should be modified to include borings in the vicinity of SS01 to further delineate the vertical extent of PCB contamination and the southward lateral extent of PCBs in this location.

4. **Section 4.4, Page 35, Paragraph 0.** The second bullet item proposes two HSA borings in Mill Scale Area 1 and installation of a perched-zone well may be installed if a perched zone is encountered, resulting in one boring east, and one boring south of existing well MDA-02S. However, EPA Deficiency 9 recommends at least four additional borings in the vicinity of Mill Scale Area 1, each with four discrete depth horizons analyzed for the presence of PCBs. The borings proposed in the SGIP are inconsistent with EPA's request and are inadequate for the following additional reasons:

HSA +
[PCB]

- The locations do not appear to be adequate to determine if flow to the north from Mill Scale Area 1 is a source of PCBs in Dick's Creek.
- The proposed locations do not appear to be adequate to detect a western component of PCB migration, if such migration is occurring.
- Only three discrete depth horizons are proposed to be sampled. In addition to being inconsistent with EPA's recommendation, the number of proposed sample horizons does not appear sufficient to determine the vertical extent of PCB contamination.

Furthermore, the SGIP does not propose soil sampling during installation of the perched-zone well due to the availability of existing soil analytical data collected during the drilling/installation of nearby well MDA03S. However, well MDA03S is approximately 1,000 feet south of the proposed perched-zone monitoring well. The SGIP should be modified to propose borings north and west of Mill Scale Area 1 and additional soil sampling in this area.

5. **Figures 3, 4, 6, and 7.** These figures depict PCB contaminant concentrations in soil and groundwater. At several locations, PCB data are indicated as "not available" (NA) on the map. However, the reason for the unavailability of these data is not discussed on the figures or in the SGIP. Specifically, it is unclear whether or not data have been collected from these locations. The SGIP and/or the figures should be amended to clearly specify the rationale for omitting data from these locations on the figures.

Soil PCBs
-NA

6. **Figures 9, 10, and 11.** These figures depict piezometric elevations and groundwater flow directions in the perched zone on various dates, and also depict the surface elevation of the native silt and clay layer that underlies the perched zone. EPA's February 8, 2001, comments noted technical inconsistencies and incorrect depictions of piezometric contours on these figures. The maps have been modified according to EPA General Comment 3 and Specific Comment 8; however, the following inconsistencies remain:

7-13-11
10:00 AM

10:00 AM
10:00 AM

1

Mapping contour
plains.

- The 650-foot groundwater elevation contour appears to be drawn incorrectly based on the data shown for monitoring wells MDA09P and MDA08P. In Figure 9, the groundwater elevation of MDA09P is 650.17 feet and the groundwater elevation of MDA08P is 647.75 feet, but the 650-foot contour line is mapped much closer to MDA08P than to MDA09P. In Figures 10 and 11, the groundwater elevations for MDA09P are 649.85 feet and 649.25 feet, respectively, and for MDA08P the groundwater elevations are 647.52 feet and 647.61 feet, respectively; however, on both figures the 650-foot contour line is plotted in the area between these two wells. The incorrect placement of the contour results in depiction of the groundwater flow direction as directly toward the interceptor trench; if the 650-foot groundwater contour was positioned correctly, groundwater would appear to be flowing directly west, toward Monroe Ditch.
- Inconsistencies exist among the contours depicting the elevation of the native silt and clay surface. For example, the map depicts most of the site at a 2-foot contour interval. However, the 652-foot contour line in the northern portion of the site, near Mill Scale Area 1, appears to have been inadvertently omitted, as the 650- and 654-foot contour lines are not separated by a 652- contour.

The data and interpretations presented on the figures should be reviewed for accuracy and revised as necessary to address these inconsistencies. Depictions of groundwater flow and native clay and silt surface elevations should be revised as necessary to address these comments.

7. **Figures 12, 13, and 14.** These figures depict groundwater elevations in the upper aquifer on various dates. These figures were revised based on recommendations in EPA Specific Comment 9 in the February 8, 2001, letter; however, some inconsistencies remain. The following inconsistencies were noted:

- These figures use a 5-foot contour interval to depict the piezometric surface. EPA Specific Comment 9 suggested reduction of the contour interval to less than 5 feet. AK Steel's response to this comment states that "a contour interval of less than 5 feet would exaggerate the degree of certainty in the ground water flow conditions shown in the figures..." However, this rationale is inconsistent with the AK Steel's depictions of groundwater flow in the perched zone (Figures 9, 10, and 11), which depict a 2-foot contour interval based on far fewer data points than are available for Figures 12, 13 and 14. A 5-foot interval oversimplifies the complexity of the piezometric surface and "masks" areas of uncertainty regarding the full range of potential localized variations in flow directions. For these reasons, Figures 12, 13, and 14 should be revised to use a contour interval of less than 5 feet, consistent with EPA's request.
- Figures 12, 13, and 14 do not include arrows depicting the groundwater

flow direction. EPA Specific Comment 9 requests that flow diagrams for the upper aquifer include flow direction indicators in the legend and on the map to be consistent with Figures 9, 10, and 11. These flow indicators have not been added. Figures 12, 13, and 14 should be modified to include flow direction indicators.

- Some contour lines appear to be inadvertently omitted or plotted incorrectly on these figures. Figures 12 and 13 do not depict a 665-foot contour line and Figures 13 and 14 do not depict a 660-foot contour line, even though the water elevation in well MDA17S ranged from 660.88 feet (Figure 14) to 667.60 feet (Figure 13). In addition, the 640-foot contour line is plotted on the upgradient side of well MDA08S (groundwater elevation measured at 640.25 feet) on Figure 13. These figures should be reevaluated for accuracy and revised as necessary.

8. **Appendix A, AK Steel's Response to EPA Deficiency 6b.** This response states that four HSA borings were completed around boring BH08 in September 2000. Borings were completed east, west, northwest and southwest of BH08, at a distance of 50 feet from BH08. The response proposes no additional boring locations because PCBs were detected at concentrations of less than 0.01 milligrams per kilogram (mg/kg) in soil samples from the borings located east, west, and northwest of BH08 and at a concentration of 0.42 mg/kg at the boring located southwest of boring BH08. The response states that these data are sufficient and no additional borings are necessary. However, EPA Deficiency 6b recommends three additional borings west, north and south of BH08, at a distance of 25 feet from the boring, to sufficiently evaluate the extent of PCB contamination adjacent to this location. The SGIP should be modified to include EPA's recommended boring locations.

9. **Appendix A, AK Steel's Response to EPA Deficiency 6c.** This response states that a soil sample was collected 50 feet north of BH13. PCBs were detected at a concentration of 0.064 mg/kg in soil samples collected at this location. The response proposes one boring west of BH13 during replacement of perched monitoring well MDA24P. This proposed boring is not mentioned in the SGIP. The response does not propose additional borings to be conducted in this area due to complications from ongoing OMS operations. EPA Deficiency 6c states that further investigation is warranted west and north of borings BH13 and BH13-S50. An effort should be made to install the borings recommended by EPA and the SGIP should be modified to propose a plan for installation of these borings.

10. **Appendix B, AK Steel's Responses to EPA General Comment 3 and Specific Comment 9.** EPA General Comment 3, sixth bullet item, discusses elevation data for well MDA03S in Figures 12, 13 and 14 that are inconsistent with flow patterns implied by the contours. The comment requests discussion of the anomalously high piezometric elevations measured at MDA03S and reevaluation of the conceptual flow model for the upper aquifer. These anomalous data are not discussed in Section 3.0 of SGIP, entitled "Hydrogeology and Conceptual Groundwater Flow Model," but are discussed in two responses in Appendix B of the SGIP. AK Steel's response to EPA General Comment 3 states that "groundwater elevation data in this area seems to indicate that a zone of higher hydraulic conductivity is present in this portion of the OMS area." However, AK Steel's

response to EPA Specific Comment 9, third bullet item, states that "groundwater elevation data in this area seems to indicate that a zone of lower permeability material is present in this portion of the OMS area." Since permeability is directly proportional to hydraulic conductivity, both of these statements cannot be correct. Steep hydraulic gradients are generally associated with materials of low hydraulic conductivity. This inconsistency should be resolved.

11. **Appendix F, Monitoring Well Construction Logs.** Appendix F contains well construction logs for monitoring wells installed between 8/9/99 and 8/23/00. Some boring logs in Appendix F are missing information pertaining to recovery and blow counts but provide no rationale for the omission of the data. For example, the boring log for borehole number MDA-26 does not have recovery information for the 14- to 16-foot split spoon sample. The SGIP or the boring logs do not indicate the reason that no recovery information is included. The boring logs should be reevaluated and any inadvertently omitted information should be included. If the data are unavailable, the rationale should be included in a footnote.
12. **Appendix G, Standard Operating Procedure (SOP) 19, Borehole Permeability Testing.** This SOP discusses methods to be used for performing borehole permeability (slug) tests and for analysis of data from these tests. AK Steel's response to EPA Specific Comment 5 cites several American Society for Testing and Materials (ASTM) standards for conducting slug tests. However, SOP 19 does not cite these standards. SOP 19 should be modified to include the complete references to the standards. In addition, ASTM Standard D5881 is incorrectly cited in AK Steel's response as the standard for performing slug tests in unconfined aquifers and as the standard for performing slug tests in confined aquifers by critically damped well response. ASTM standard D5881 is titled "Standard Test Method for (Analytical Procedure) Determining Transmissivity of Confined Nonleaky Aquifers by Critically Damped Well Response to Instantaneous Change in Head (Slug)" (ASTM 1995). The correct guideline for performing slug tests in unconfined aquifers is ASTM standard D5912-96e1, "Standard Test Method for (Analytical Procedure) Determining Hydraulic Conductivity of an Unconfined Aquifer by Overdamped Well Response to Instantaneous Change in Head (Slug)" (ASTM 1996). This inconsistency should be resolved and SOP 19 modified as necessary.
- include -
\$ tunnel*

REFERENCES

- American Society for Testing and Materials (ASTM). 1995. Method D5881-95 - Standard Test Method for (Analytical Procedure) Determining Transmissivity of Confined Nonleaky Aquifers by Critically Damped Well Response to Instantaneous Change in Head (Slug). Approved December 10. Published April 1996.
- ASTM. 1996b. Method D5912-96e1 - Standard Test Method for (Analytical Procedure) Determining Hydraulic Conductivity of an Unconfined Aquifer by Overdamped Well Response to Instantaneous Change in Head (Slug). Approved February. Published June.

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